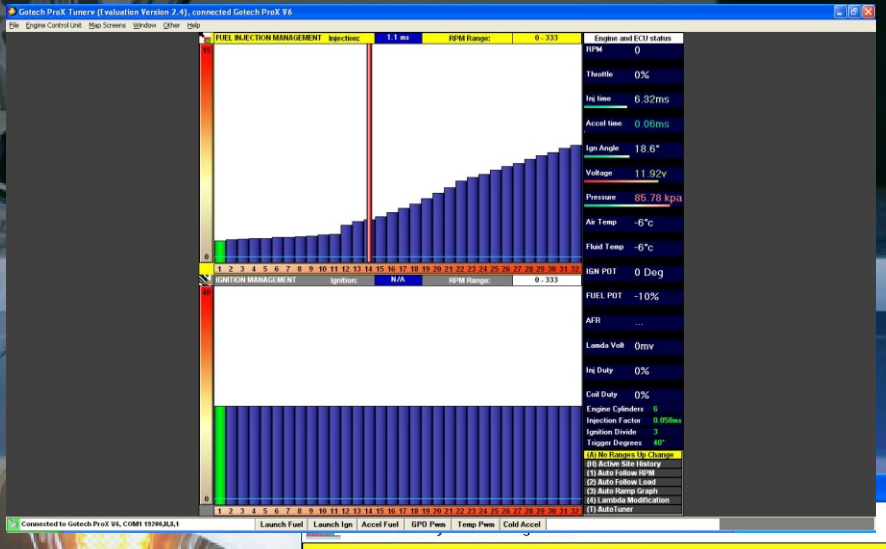
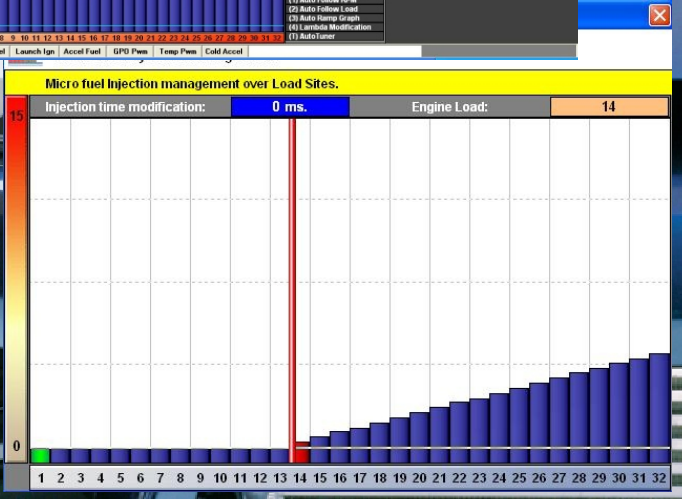
Gotech-MFI

Engine Management Systems




Micro fuel Injection management over Load Sites.
Injection time modification:
0 ms.
Engine Load:
14
15
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Software User Manual
MFI X and PRO X

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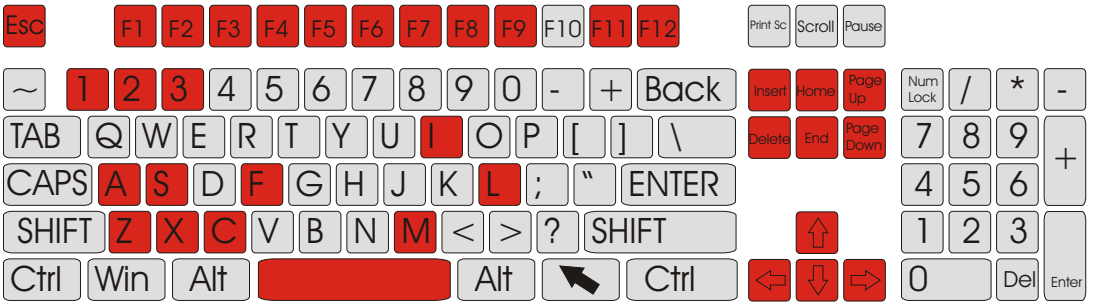
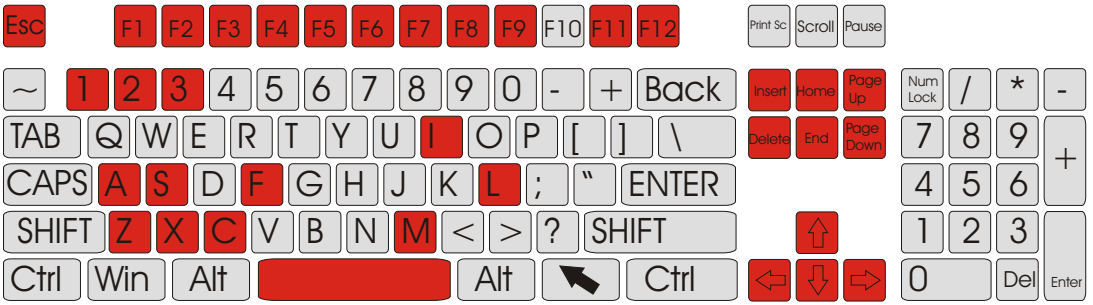
Keyboard Functions:


Esc
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12
Print Sc Scroll Pause
~ 1 2 3 4 5 6 7 8 9 0 - + Back
Insert Home Page Up
Num Lock / * -
TAB Q W E R T Y U I O P [ ] \
Delete End Page Down
7 8 9 +
CAPS A S D F G H J K L ; " ENTER
4 5 6
SHIFT Z X C V B N M < > ? SHIFT
1 2 3 Enter
Ctrl Win Alt Alt Ctrl
0 Del

On most computers the keyboard looks like the one above. The Gotech software uses the highlighted keys. The keys are used for:

⇧ Up Arrow	Increase map
⇩ Down Arrow	Decrease map
⇦ Left Arrow	Move Active Tuning Site Left
⇨ Right Arrow	Move Active Tuning Site Right
Page Up	Move To Next RPM Range
Page Down	Move To Previous RPM Range
Insert	Large Map Increase
Delete	Large Map Decrease
A	Turn All Ranges On and Off
I	Toggle Between Fuel And Ign
L	Start And Stop Online Data Log
S	Show Logged Data
1	Turn Auto Follow RPM On & Off
2	Turn Auto Follow Load On & Off
3	Auto Ramp Graph
Home	Jump to first load site
End	Jump to last load site

Keyboard Functions Continued:


Esc
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12
Print Sc Scroll Pause
~ 1 2 3 4 5 6 7 8 9 0 - + Back
Insert Home Page Up
Num Lock / * -
TAB Q W E R T Y U I O P [ ] \
Delete End Page Down
7 8 9 +
CAPS A S D F G H J K L ; " ENTER
4 5 6
SHIFT Z X C V B N M < > ? SHIFT
1 2 3 Enter
Ctrl Win Alt Alt Ctrl
0 Del

F1 F1	Connect To ECU
F2 F2	Disconnect From ECU
F3 F3	Load Map Onto ECU
F4 F4	Save Map Onto Hard Drive
F5 F5	Configuration Screen
F6 F6	Water Temp Correction
F7 F7	Air Temp Correction
F8 F8	Battery Voltage Correction
F9 F9	Micro Fuel Screen
SPACE BAR	Mark Position

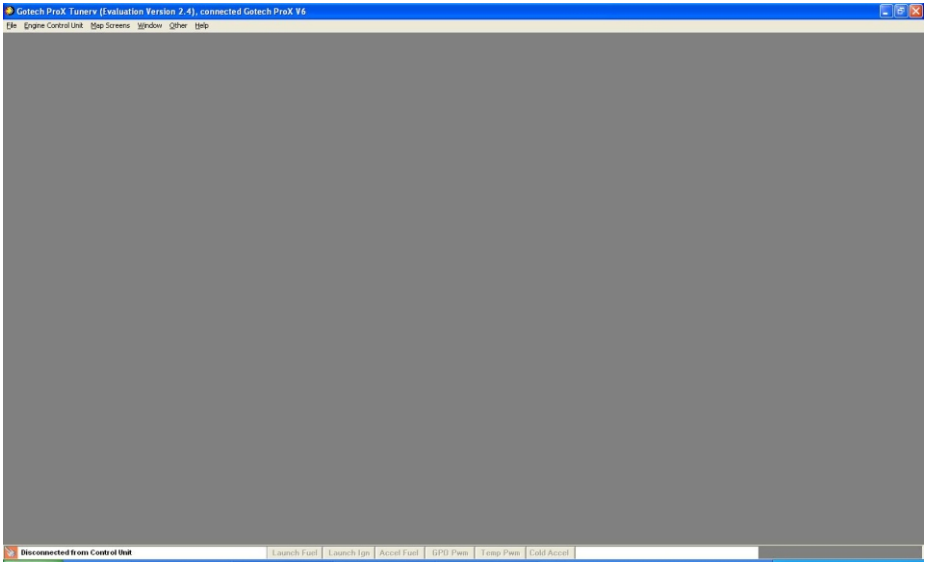
Full Details On These Key Commands Will Be Discussed Throughout This Manual.

Keyboard Functions Continued:

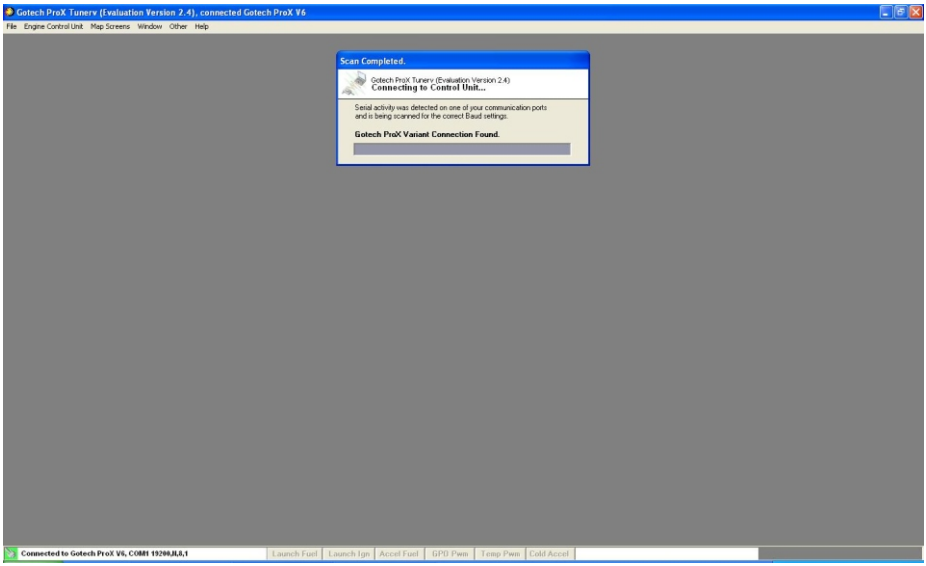
Key Assignment Menu
Gotech ProX Tunerv (Evaluation Version 2.4)
Keyboard Assignments menu.
Program functions assigned to certain Buttons on the keyboard.
Map Control Keys
Left - Move Active Load Site one Left
Right - Move Active Load Site one Right
Home - Move to First Active Load Site
End - Move to Last Active Load Site
PgUp - Next RPM Range
PgDown - Last RPM Range
Up - Small Increase
Down - Small Decrease
Ins - Large Increase
Del - Large Decrease
'i' - Switch Between Injection and Ignition
'A' - On/Off All Ranges the Same Change
'H' - On/Off Active Site History
'1' - On/Off Auto Follow Load
'R' or '2' - On/Off Auto Follow RPM
'3' - On/Off Auto Ramp Graph
'4' - On/Off Show Lambda Modification
Space - On/Off Ramp Marker
'V' - On/Off Map of Target AFR's for Loads
'B' - Copy Configuration and Setup To Back Up
Map Activation Keys
'F5' - Configuration and Setup
'F6' - Water Temp Correction map
'F7' - Air Temp Correction map
'F8' - Voltage Correction map
'F9' - Micro Fueling map
'F11' - Launch Control map
'F12' - GPO Control map
'F' - Injection and Ignition map
'CTL + C' - Back Up Configuration and Setup
Other Keys
'F1' - Connect to ECU
'F2' - Disconnect from ECU
'F3' - load a Map from Disk to ECU
'F4' - Save a Map from ECU to Disk
'M' - Show Key Assignment menu
'L' - Activate and DeActivate Logging
'S' - Show Logged Data
'P' - Engine Data Panel
'D' - Apply Config with out Closing

To view the key commands in the Gotech software simply press the M key.

Main Software Screen:

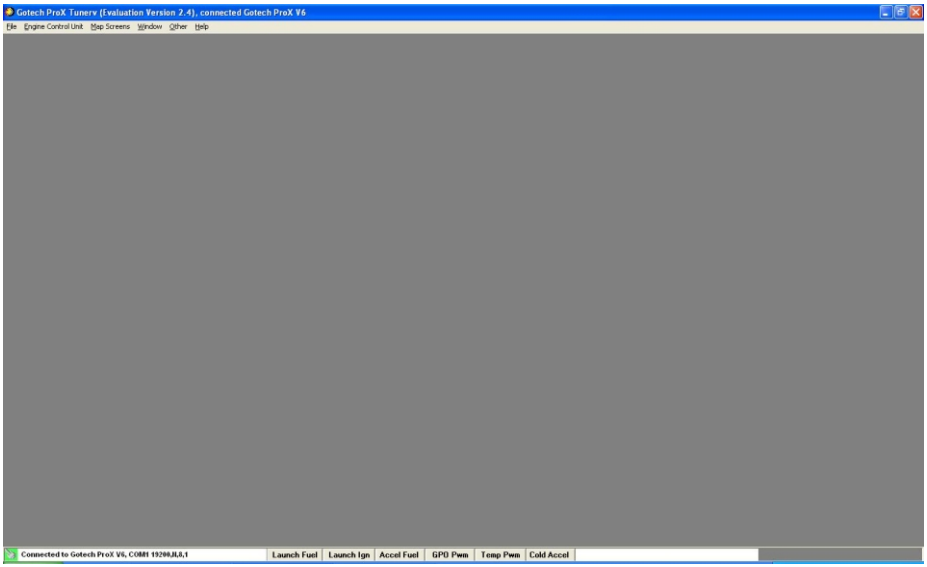


When entering the Gotech software you will see the screen above. To connect to the Gotech ECU press the F1 key. For the software to connect, the Gotech ecu must first be powered up. Whilst connecting to the Gotech ecu you will see the screen below.

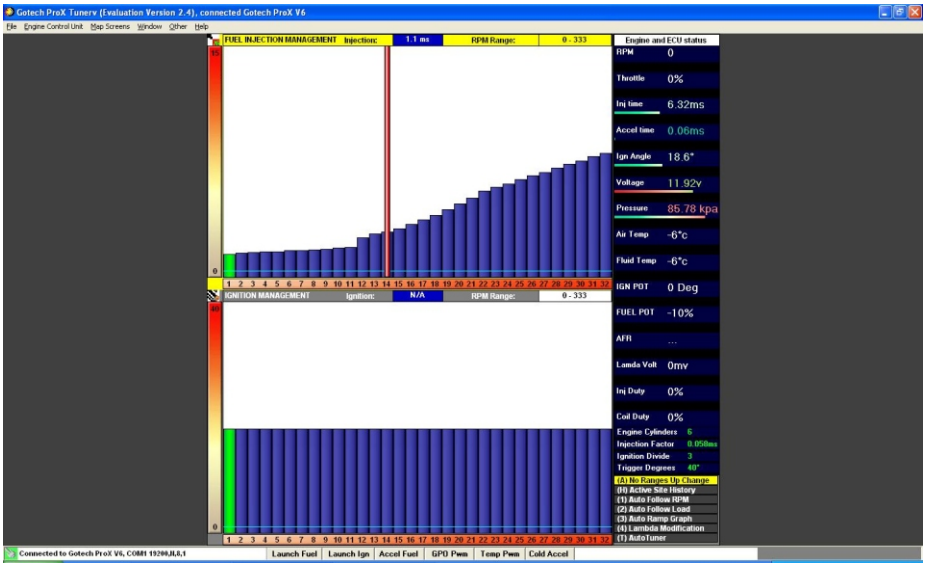

Gotech ProX Tunerv (Evaluation Version 2.4), connected Gotech ProX V6
File Engine Control Unit Map Screens Window Other Help
Scan Completed.
Gotech ProX Tunerv (Evaluation Version 2.4)
Connecting to Control Unit...
Serial activity was detected on one of your communication ports and is being scanned for the correct Baud settings.
Gotech ProX Variant Connection Found.
Connected to Gotech ProX V6, COM1 19200,8,N,1
Launch Fuel
Launch Ign
Accel Fuel
GPO Pwm
Temp Pwm
Cold Accel

Main Software Screen:

After connecting to the Gotech ecu you will see the screen below.

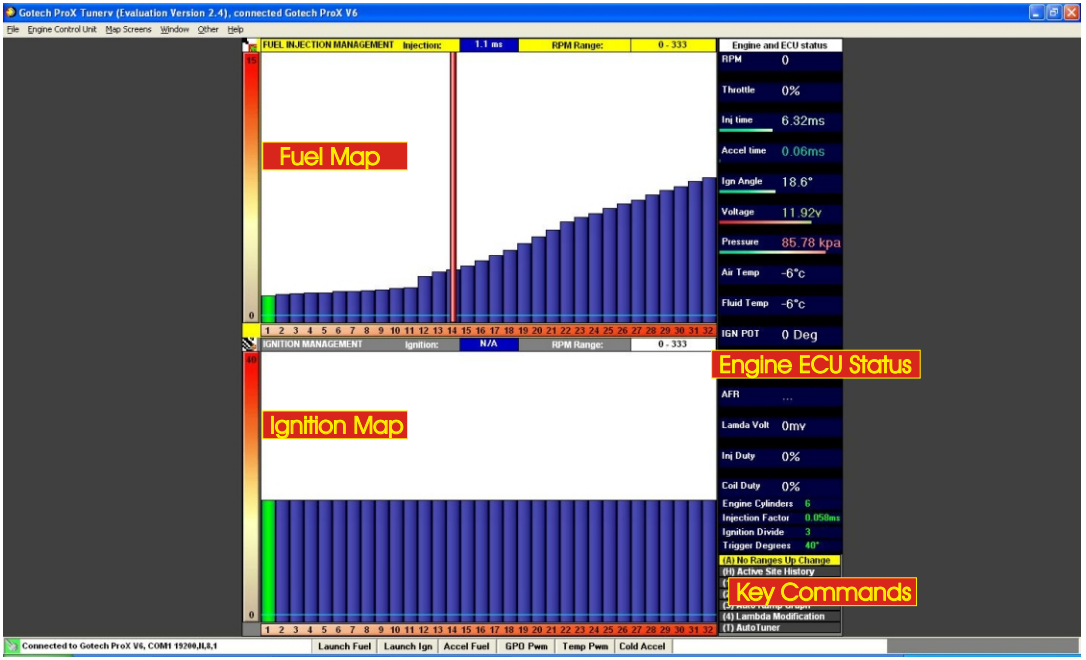

Gotech ProX Tunerv (Evaluation Version 2.4), connected Gotech ProX V6
File Engine Control Unit Map Screens Window Other Help
Connected to Gotech ProX V6, COM1 19200,N,8,1
Launch Fuel
Launch Ign
Accel Fuel
GPO Pwm
Temp Pwm
Cold Accel

Press the F Key to display the fuel and ignition screen.



Anatomy of the main software screen:

The main software screen is divided into 4 sections. These sections are the Fuel Map, Ignition Map, Engine Ecu status and the basic Key Commands.

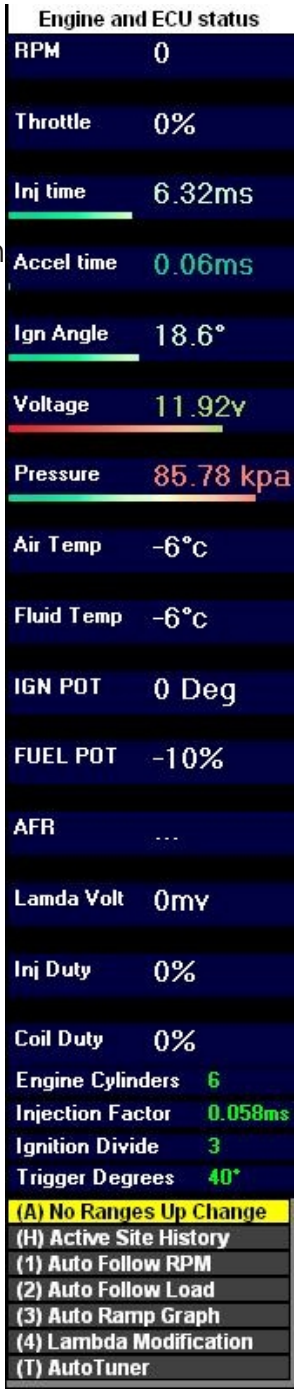


The Engine Ecu status shows current engine conditions. The items displayed are:

Engine RPM, Throttle position, Total injector time, Acceleration time, Total ignition angle, Voltage to the ecu, Manifold pressure, Air temp, Water temp, Ignition pot, Fuel pot, AFR, Lambda Voltage, Injector duty cycle, Coil duty cycle, Engine number of cylinders, Injector time factor, Ignition divide and Trigger degrees.

These will be explained on the next page.

Engine Ecu Status Display:



RPM - Physical Engine Speed

Throttle - Throttle position sensor input percentage

Injector time - Total time which injector is currently open

Acceleration time - injector ms added onto the fuel map by the accelerator pump

Ignition angle - Physical ignition angle supplied to coil

Voltage - Voltage reading for power input to ecu

Pressure - Manifold pressure, measured in kpa

Air temp - Air temperature input, measured in 'c

Fluid temp - Fluid temp input, measured in 'c

Ign pot - Ignition angle subtracted

Fuel pot - Inj time percentage added or subtracted.

AFR - Air/Fuel ratio reading

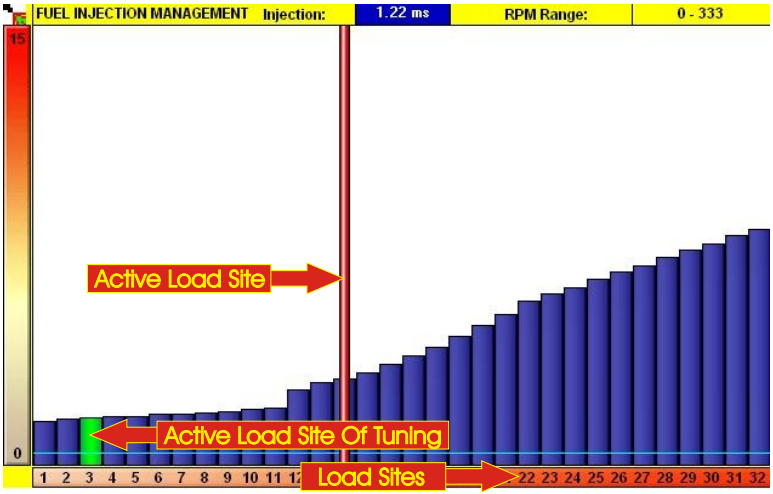
Lambda Voltage - Lambda voltage input

Injector duty cycle - Current duty cycle of the injectors

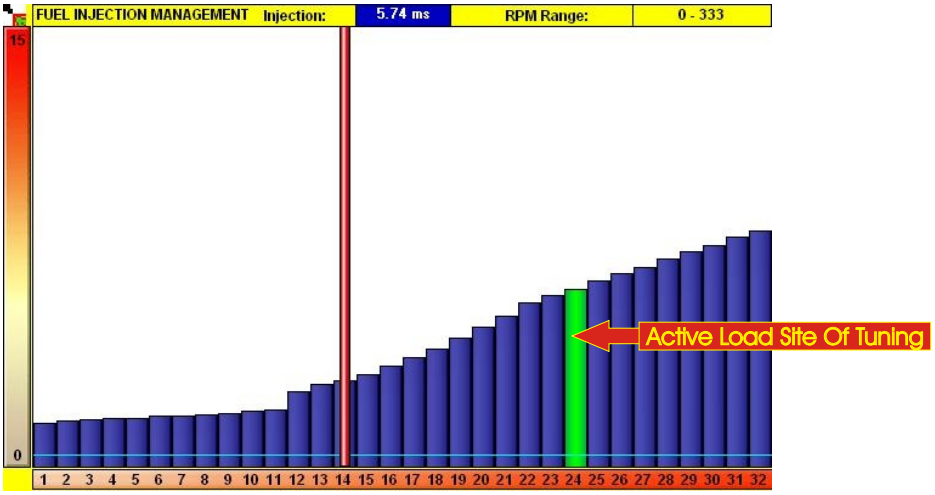
Coil duty cycle - Current duty cycle of the ign coil

Injection factor - Each click of the fuel map will add or subtract the total selected. On the sample this will be 0.058ms per click.

The Fuel Map: (Moving the Active Load Site)

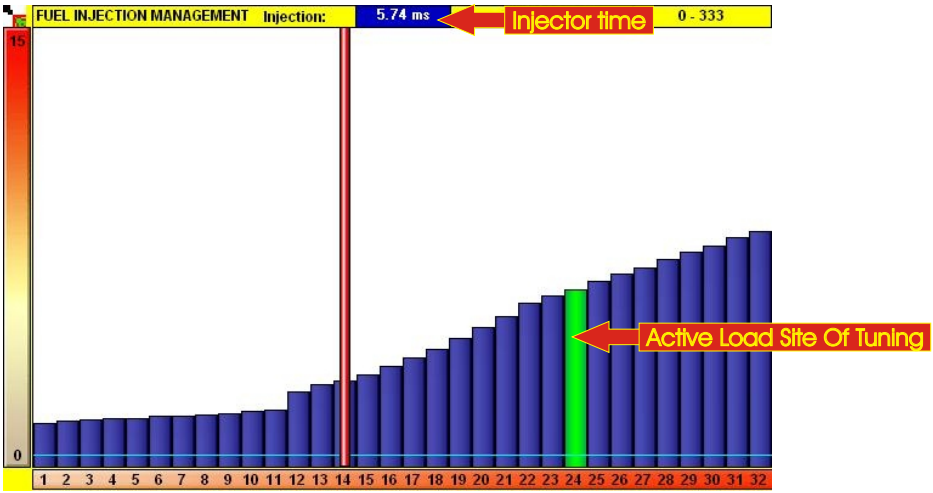


The Fuel Map is used to setup the fueling. The bar highlighted in green is the active load site of tuning. To move the load site where you want to tune press the right or left arrow key.

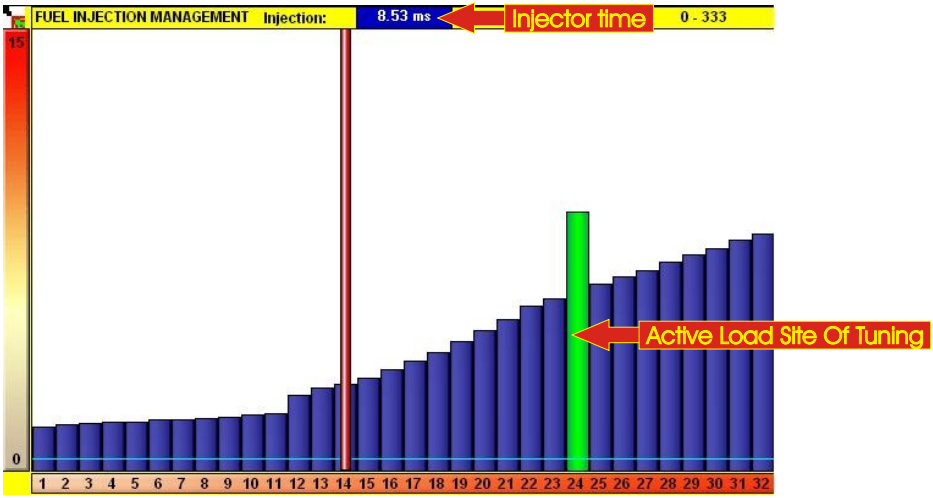


When pressing the right arrow key you will notice the highlighted bar moving to the right. The same effect will be archived when pressing the left arrow key. The active load site of tuning will then move to the left.

The Fuel Map Continued: (Changing the inj time)

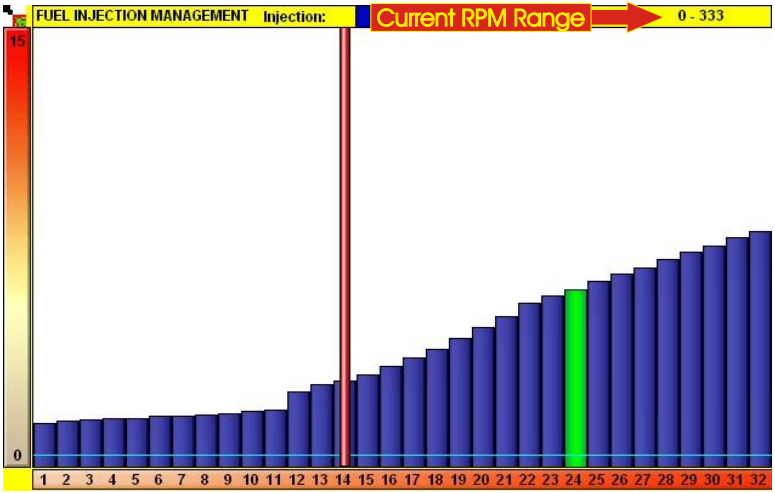

FUEL INJECTION MANAGEMENT Injection: 5.74 ms
Injector time
0 - 333
15
0
Active Load Site Of Tuning
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

To increase or decrease the fueling, move the active load site of tuning to the preferred place. Then press the Up Arrow to increase the injector time and the down arrow to make it less.

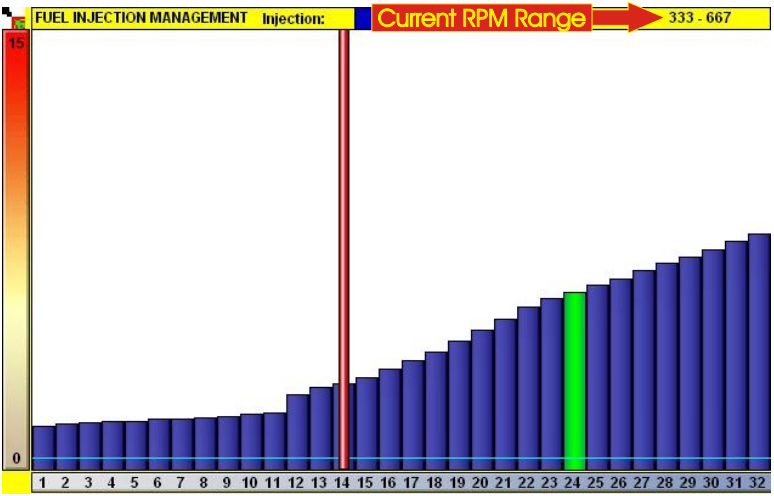

FUEL INJECTION MANAGEMENT Injection: 8.53 ms
Injector time
0 - 333
15
0
Active Load Site Of Tuning
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

When pressing the Up Arrow you will notice the injector time going up. The same effect will be archived when pressing the down arrow. You will then notice the injector time moving down.

The Fuel Map Continued: (Moving RPM Ranges)

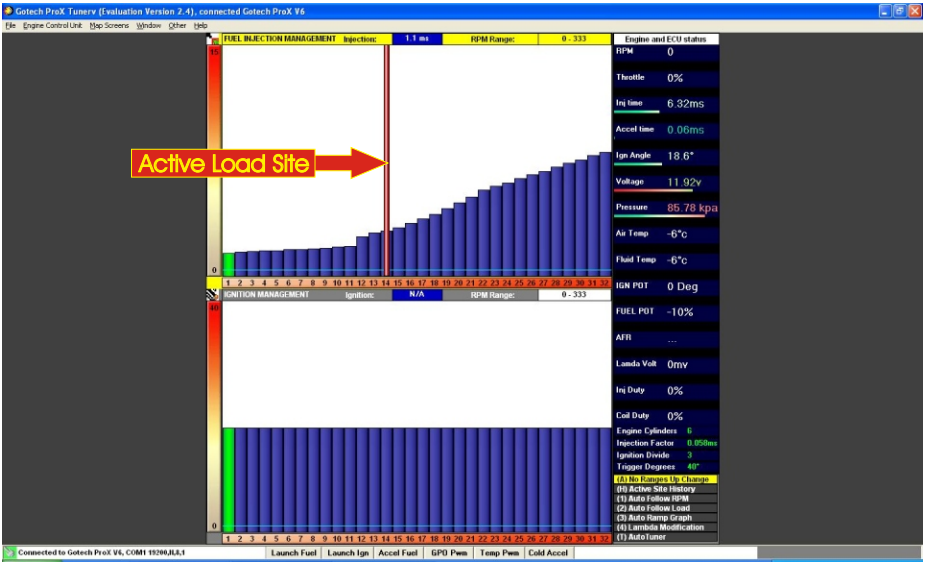


The fuel maps are sorted in RPM ranges. So in actual fact there is 32 Load sites every RPM range. On a 4 cylinder engine the maps are tunable on every 500rpm. To move to the next RPM range press the Page UP key. To move to the previous RPM range press the Page Down key.

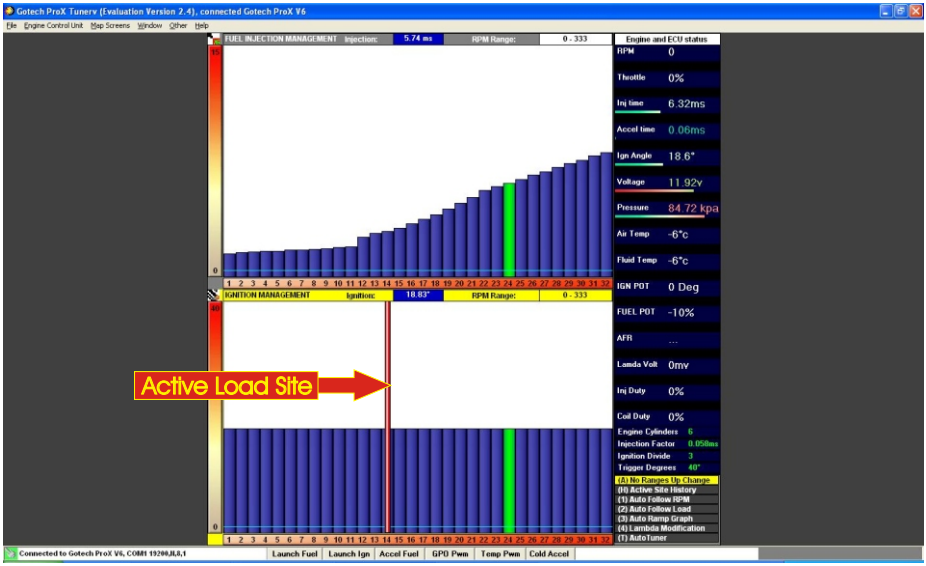


You will see the RPM range move up when pressing the Page Up key.

The Ignition Map: (Toggle between fuel and ignition)



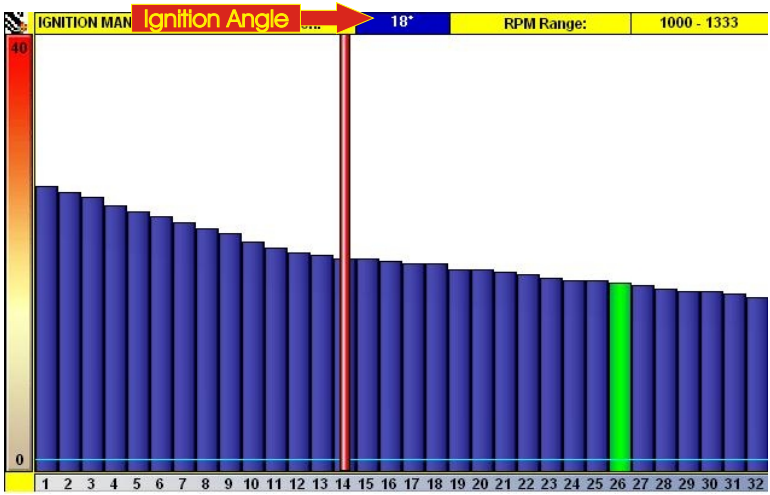
To toggle between the fuel and ignition screen, press the I Key.



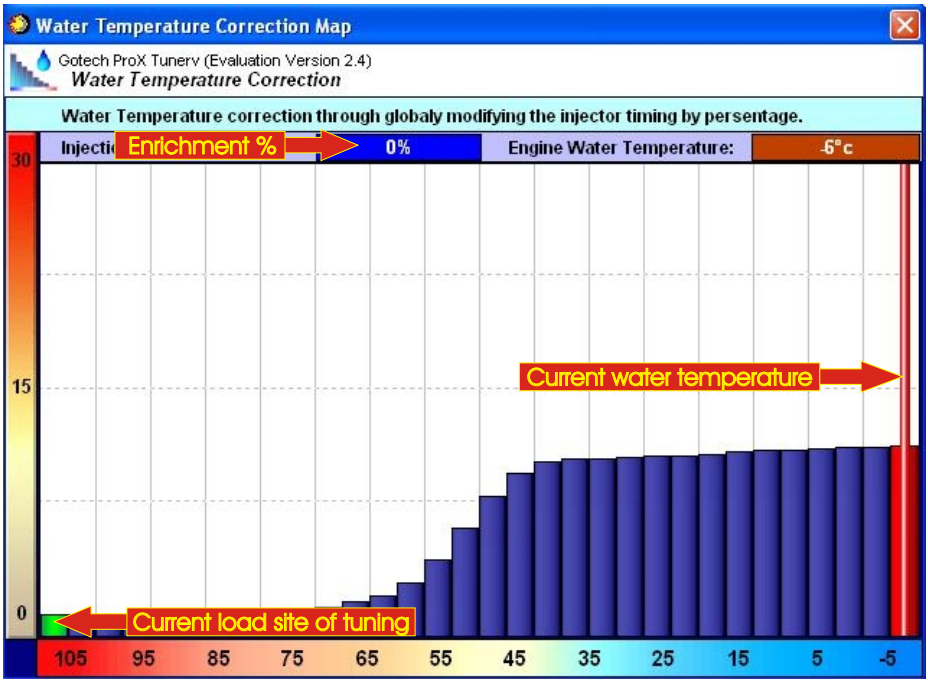
By pressing the I Key you will notice the active load site moving to the bottom. The ignition screen is now active.

The Ignition Map Continued:

The ignition map works on the same principle as the fuel screen. The up arrow will increase the ignition angle and the down arrow will make it less. The left and right arrow keys will move the active load site of tuning and the Page Up/Page Down keys will toggle between RPM ranges. When the ignition angle is increased then the ignition timing is being advanced.



Water temp correction screen: (F6)



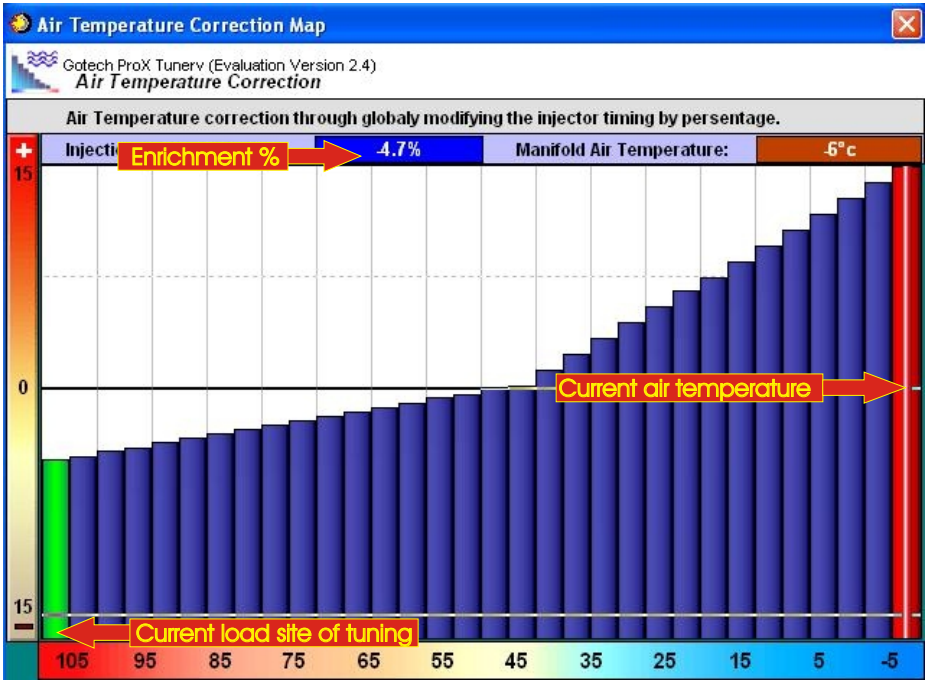
The water temperature correction map is used to enrich the engine when cold. The main tuning principle is the same as on the fueling map, except that the water temp correction is not RPM based.

The Green highlighted bar is the current load site of tuning. The red bar is where engine temperature is currently situated.

The left and right arrow keys are used to move the current load site of tuning between the temperature ranges. The up and down arrow keys are used to increase and decrease the enrichment percentage.

- Move Current Load Site Of Tuning Left
- Move Current Load Site Of Tuning Right
- Decrease enrichment percentage
- Increase enrichment percentage

Air temp correction screen: (F7)



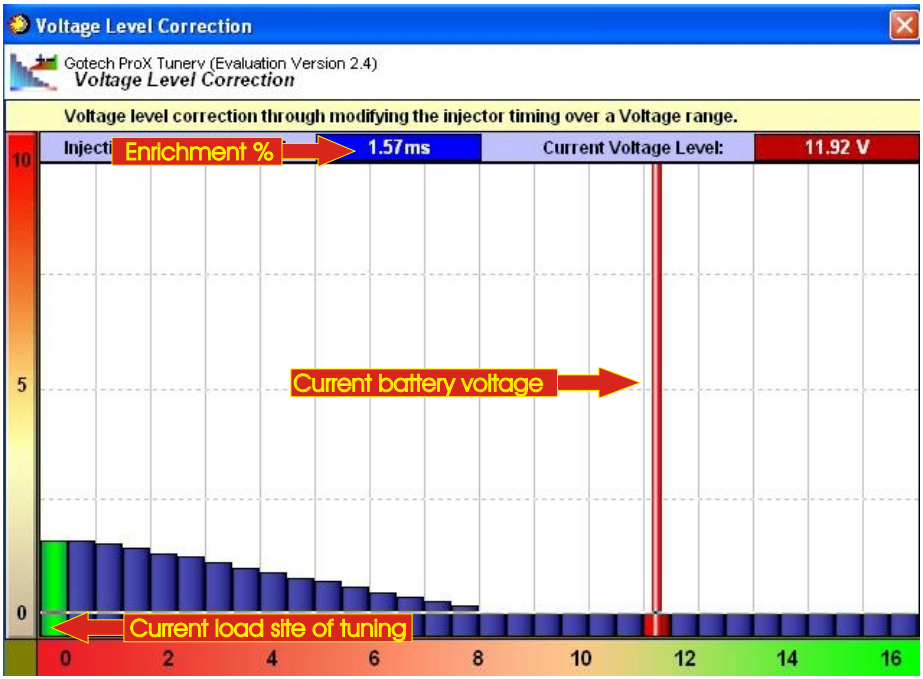
The air temperature correction map is used to enrich the engine when the air temp is cold. The main tuning principle is the same as on the fueling map, except that the air temp correction is not RPM based.

The Green highlighted bar is the current load site of tuning. The red bar is where the air temperature is currently situated.

The left and right arrow keys are used to move the current load site of tuning between the temperature ranges. The up and down arrow keys are used to increase and decrease the enrichment percentage.

- Move Current Load Site Of Tuning Left
- Move Current Load Site Of Tuning Right
- Decrease enrichment percentage
- Increase enrichment percentage

Battery Voltage correction screen: (F8)



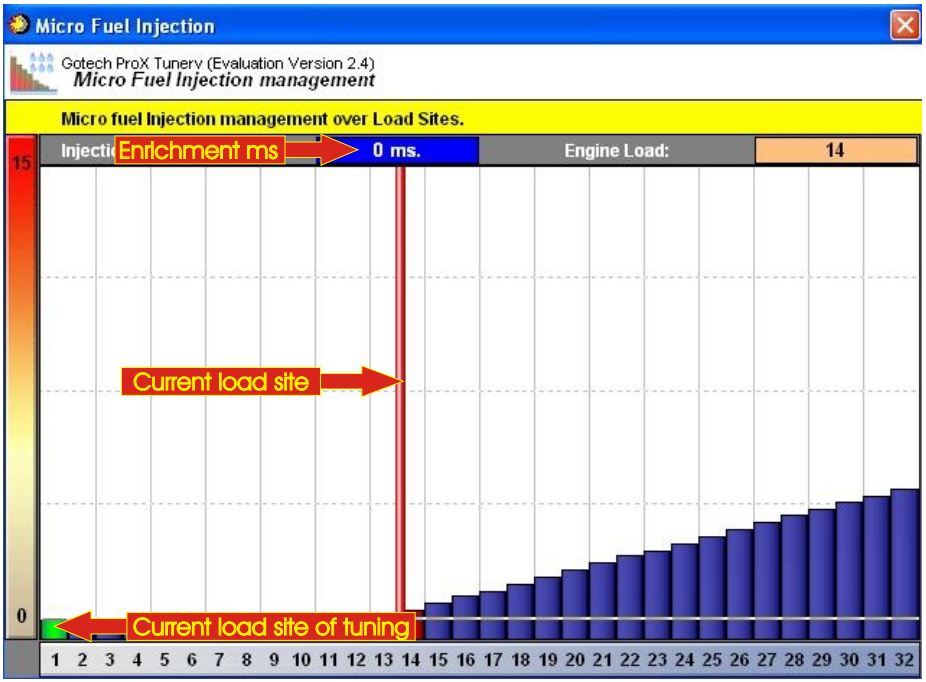
The battery voltage correction map is used to enrich the engine when the battery voltage drops. The main tuning principle is the same as on the fueling map, except that the battery voltage correction is not RPM based.

The Green highlighted bar is the current load site of tuning. The red bar is where the battery voltage is currently situated.

The left and right arrow keys are used to move the current load site of tuning between the voltage ranges. The up and down arrow keys are used to increase and decrease the enrichment percentage.

- Move Current Load Site Of Tuning Left
- Move Current Load Site Of Tuning Right
- Decrease enrichment percentage
- Increase enrichment percentage

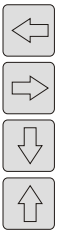
Micro staged fuel map: (F9)


Micro Fuel Injection
Gotech ProX Tunerv (Evaluation Version 2.4)
Micro Fuel Injection management
Micro fuel Injection management over Load Sites.
Injecti
Enrichment ms
0 ms.
Engine Load:
14
15
0
Current load site
Current load site of tuning
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

The micro staged fuel map is used to control a second set of fuel injectors. The main tuning principle is the same as on the fueling map, except that the micro staged map is not RPM based.

The Green highlighted bar is the current load site of tuning. The red bar is the active load site.

The left and right arrow keys are used to move the current load site of tuning between the load sites. The up and down arrow keys are used to increase and decrease the injector time.



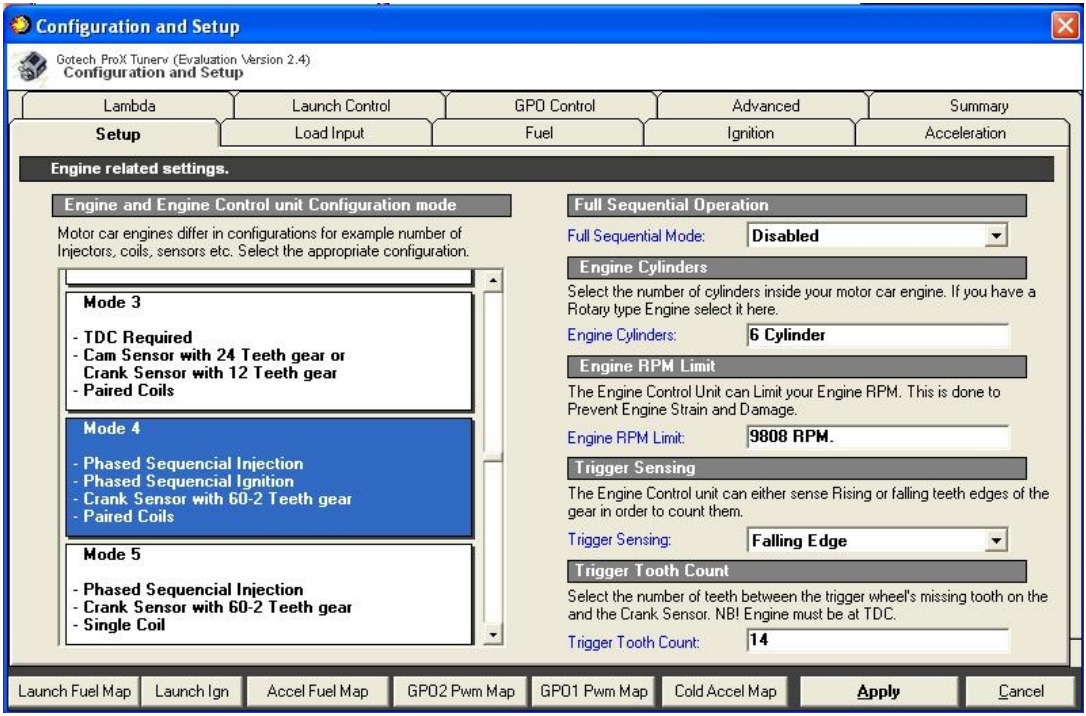
Move Current Load Site Of Tuning Left

Move Current Load Site Of Tuning Right

Decrease injector time

Increase injector time

Main Setup: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Engine related settings.
Engine and Engine Control unit Configuration mode
Motor car engines differ in configurations for example number of Injectors, coils, sensors etc. Select the appropriate configuration.
Mode 3
- TDC Required
- Cam Sensor with 24 Teeth gear or Crank Sensor with 12 Teeth gear
- Paired Coils
Mode 4
- Phased Sequencial Injection
- Phased Sequencial Ignition
- Crank Sensor with 60-2 Teeth gear
- Paired Coils
Mode 5
- Phased Sequencial Injection
- Crank Sensor with 60-2 Teeth gear
- Single Coil
Full Sequential Operation
Full Sequential Mode:
Disabled
Engine Cylinders
Select the number of cylinders inside your motor car engine. If you have a Rotary type Engine select it here.
Engine Cylinders:
6 Cylinder
Engine RPM Limit
The Engine Control Unit can Limit your Engine RPM. This is done to Prevent Engine Strain and Damage.
Engine RPM Limit:
9808 RPM.
Trigger Sensing
The Engine Control unit can either sense Rising or falling teeth edges of the gear in order to count them.
Trigger Sensing:
Falling Edge
Trigger Tooth Count
Select the number of teeth between the trigger wheel's missing tooth on the and the Crank Sensor. NB! Engine must be at TDC.
Trigger Tooth Count:
14
Launch Fuel Map
Launch Ign
Accel Fuel Map
GP02 Pwm Map
GP01 Pwm Map
Cold Accel Map
Apply
Cancel

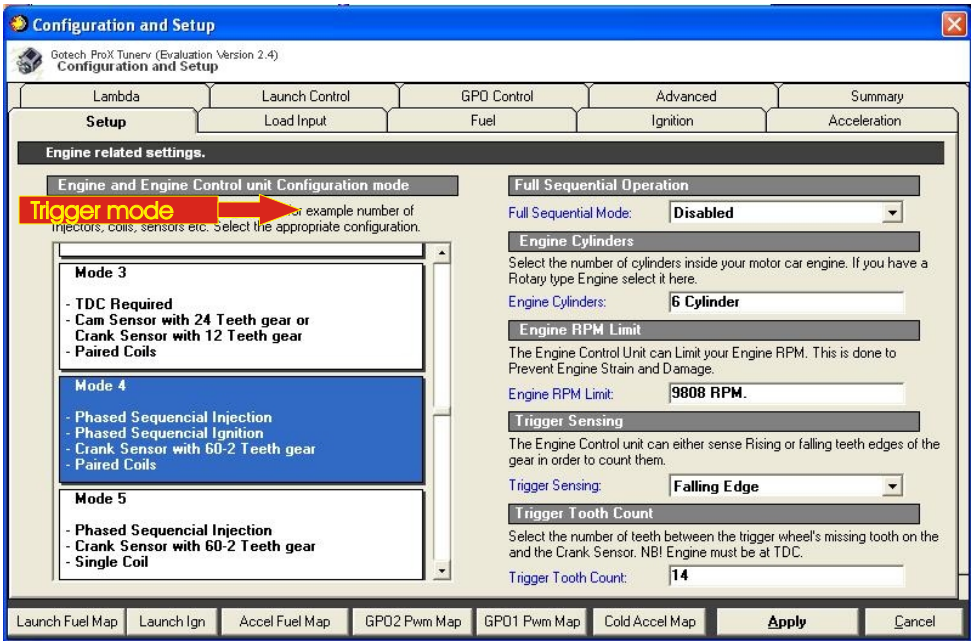
The ecu can be configured in the f5 screen to suite the engine. Other important settings can also be changed here, eg Acceleration pump, General purpose outputs and launch control settings.

After making any changes to the f5 screen the "Apply Button" must be clicked to save the data to the Gotech ecu. The f5 screen does not make real time changes like the fuel or ignition screen.

To navigate around the computer's mouse is used and the left mouse button is used to select items. In most cases the Page Up and Page Down keys are used to make changes.

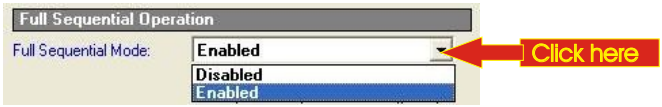
Page Up	Increase value
Page Down	Decrease value

Main Setup: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Engine related settings.
Engine and Engine Control unit Configuration mode
Trigger mode
Mode 3
- TDC Required
- Cam Sensor with 24 Teeth gear or Crank Sensor with 12 Teeth gear
- Paired Coils
Mode 4
- Phased Sequencial Injection
- Phased Sequencial Ignition
- Crank Sensor with 60-2 Teeth gear
- Paired Coils
Mode 5
- Phased Sequencial Injection
- Crank Sensor with 60-2 Teeth gear
- Single Coil
Full Sequential Operation
Full Sequential Mode: Disabled
Engine Cylinders
Select the number of cylinders inside your motor car engine. If you have a Rotary type Engine select it here.
Engine Cylinders: 6 Cylinder
Engine RPM Limit
The Engine Control Unit can Limit your Engine RPM. This is done to Prevent Engine Strain and Damage.
Engine RPM Limit: 9808 RPM.
Trigger Sensing
The Engine Control unit can either sense Rising or falling teeth edges of the gear in order to count them.
Trigger Sensing: Falling Edge
Trigger Tooth Count
Select the number of teeth between the trigger wheel's missing tooth on the and the Crank Sensor. NB! Engine must be at TDC.
Trigger Tooth Count: 14
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

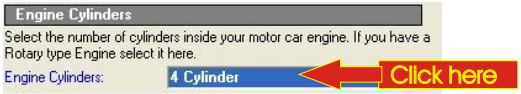
The main setup screen is the most critical part of the Gotech software. Here you can select the trigger input and engine setup.

The configuration modes available are: (These are explained in the wiring installation manual)
To select a mode, click on the preferred mode to use with the left mouse button.
Mode 0 - Trigger Per Event, No TDC; Distributor only.
Mode 1 - Trigger Per Event, Plus TDC; Distributor only.
Mode 2 - Trigger Per Event, Plus TDC; Distributor or coil packs (Full sequential compatible)
Mode 3 - Distributor 24 tooth sensor, Plus TDC; Distributor or coil packs
Mode 4 - Crank angle input 60 -2; Coil packs (Full sequential compatible with TDC)
Mode 5 - Crank angle input 60 -2; Distributor only.
Mode 6 - Crank angle input 36 -1; Coil Packs (Full sequential compatible with TDC)
Mode 7 - Distributor 24-2 sensor; Distributor or coil packs (Full sequential compatible)



The full sequential mode can be enabled by left clicking on the drop down list and then using the left mouse button to select "Enabled". The full sequential mode can only be selected in certain applications. These have been pin pointed above.

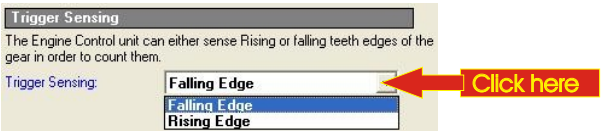
Main Setup: (F5) Continued

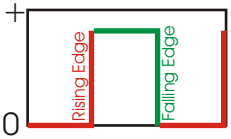

Engine Cylinders
Select the number of cylinders inside your motor car engine. If you have a Rotary type Engine select it here.
Engine Cylinders:
4 Cylinder
Click here

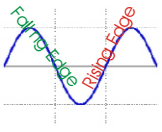
The engine cylinders value is used by the ecu to determine the engine setup. To change the number of cylinders, left click on the Cylinders block and use the Page Up and Page Down buttons to change the number of cylinders. Eg on a four cylinder engine you would want this value to be four.

Engine RPM Limit
The Engine Control Unit can Limit your Engine RPM. This is done to Prevent Engine Strain and Damage.
Engine RPM Limit:
14712 RPM.
Click here

The Gotech ecu has a built in RPM limiter. To change the RPM limit left click on the RPM limit value and use the Page Up and Page Down buttons to make it higher or lower.


Trigger Sensing
The Engine Control unit can either sense Rising or falling teeth edges of the gear in order to count them.
Trigger Sensing:
Falling Edge
Falling Edge
Rising Edge
Click here





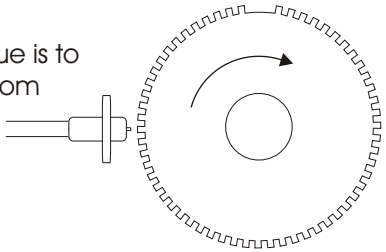
The ecu can be setup to trigger on the falling or rising edge when using a distributor. Before making a change it is best to inspect the distributor and see for which mode it is setup. To change the trigger sensing value, left click on the drop down list and left click on the preferred setup.

Trigger Tooth Count
Select the number of teeth between the trigger wheel's missing tooth on the and the Crank Sensor. NB! Engine must be at TDC.
Trigger Tooth Count:
14
Click here

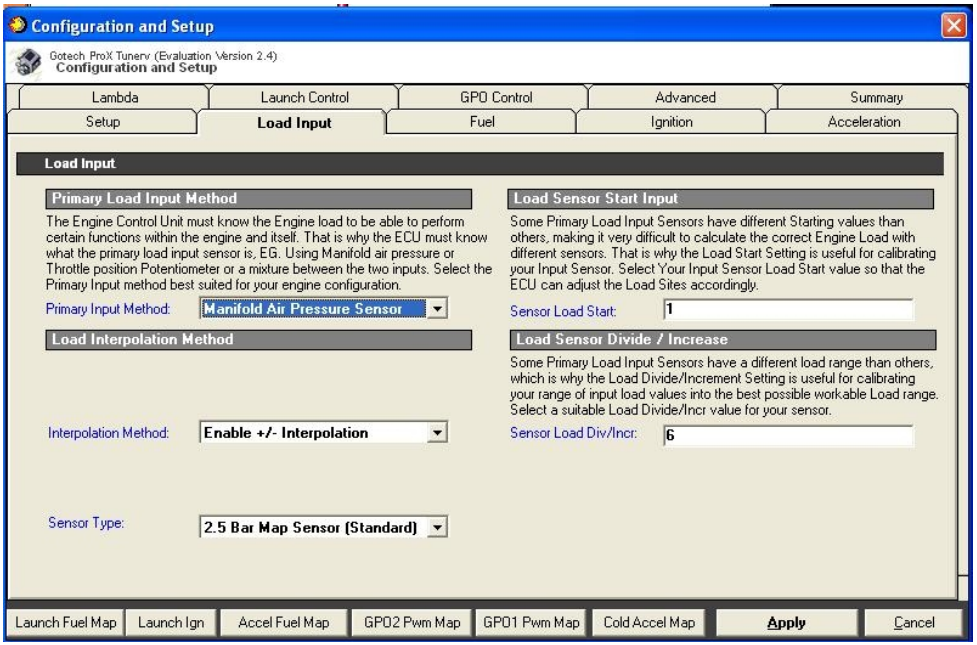
The trigger tooth value is used to match the ignition timing. This value is only used in Mode4, Mode5, Mode6 and Mode7. On a 60 -2 trigger wheel each tooth change will make a 6' ignition angle change on the engine. To advance the ignition timing go less and to retard the ignition timing increase the trigger tooth. To change the trigger tooth value, left click on the trigger tooth value and use the Page Up and Page Down key to make a change.

Hint:
A quick and simple way to estimate the trigger tooth value is to turn the engine to TDC and count the amount of teeth from the sensor to the gap. At TDC the gap will be past the sensor.

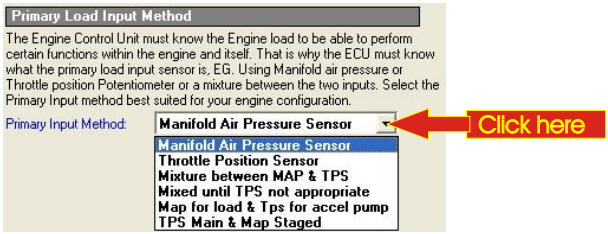
In this case the trigger tooth will be 14.



Load Input: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Load Input
Primary Load Input Method
The Engine Control Unit must know the Engine load to be able to perform certain functions within the engine and itself. That is why the ECU must know what the primary load input sensor is, EG. Using Manifold air pressure or Throttle position Potentiometer or a mixture between the two inputs. Select the Primary Input method best suited for your engine configuration.
Primary Input Method:
Manifold Air Pressure Sensor
Load Sensor Start Input
Some Primary Load Input Sensors have different Starting values than others, making it very difficult to calculate the correct Engine Load with different sensors. That is why the Load Start Setting is useful for calibrating your Input Sensor. Select Your Input Sensor Load Start value so that the ECU can adjust the Load Sites accordingly.
Sensor Load Start:
1
Load Interpolation Method
Load Sensor Divide / Increase
Some Primary Load Input Sensors have a different load range than others, which is why the Load Divide/Increment Setting is useful for calibrating your range of input load values into the best possible workable Load range. Select a suitable Load Divide/Incr value for your sensor.
Interpolation Method:
Enable +/- Interpolation
Sensor Load Div/Incr:
6
Sensor Type:
2.5 Bar Map Sensor (Standard)
Launch Fuel Map
Launch Ign
Accel Fuel Map
GP02 Pwm Map
GP01 Pwm Map
Cold Accel Map
Apply
Cancel

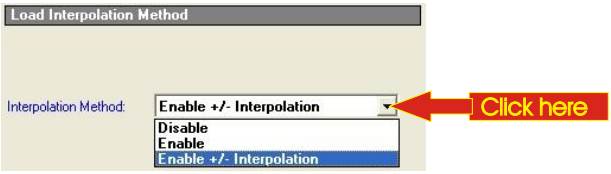
The load input screen is used to select the primary inputs, calibrate the manifold pressure sensor and calibrate the throttle position.


Primary Load Input Method
The Engine Control Unit must know the Engine load to be able to perform certain functions within the engine and itself. That is why the ECU must know what the primary load input sensor is, EG. Using Manifold air pressure or Throttle position Potentiometer or a mixture between the two inputs. Select the Primary Input method best suited for your engine configuration.
Primary Input Method:
Manifold Air Pressure Sensor
Click here
Manifold Air Pressure Sensor
Throttle Position Sensor
Mixture between MAP & TPS
Mixed until TPS not appropriate
Map for load & Tps for accel pump
TPS Main & Map Staged

Manifold Air Pressure Sensor - Map sensor as primary input
Throttle position sensor - TPS as the primary input and the map sensor for altitude comp.
Mix between Map and TPS - TPS and Map sensor as primary input.
Mixed until TPS not appropriate - TPS as primary input until boost then Map as primary.
Map for load & TPS for accell - Map sensor as primary input, TPS only for the accell pump.
TPS Main & Map staged - TPS as primary input, Map sensor only for the micro fueller.

Hint: For a normally aspirated vehicle with mild camshafts; Map for load& TPS for accell pump is a good choice.

Load Input: (F5) Continued

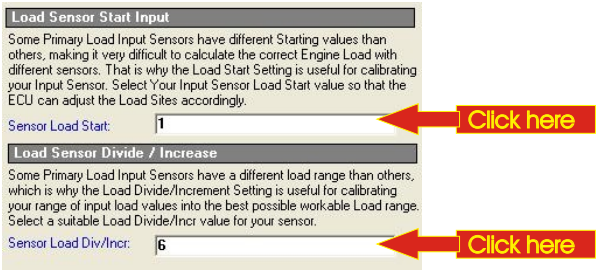


The load interpolation method enables / disables interpolation between the load sites. The most effective way to run the ecu is with the interpolation enabled.

Sensor Type:
2.5 Bar Map Sensor (Standard)
2.5 Bar Map Sensor (Standard)
3 Bar Map setup (Optional)
3.5 Bar Map setup (Optional)
4 Bar Map setup (Optional)
4.5 Bar Map setup (Optional)
Click here

The sensor type configures the ecu for the type of map sensor that has been installed. When using a standard map sensor the load start and load interpolation values will be active. When selecting any one of the optional items, the ecu will automatically scale the fuel and ignition maps

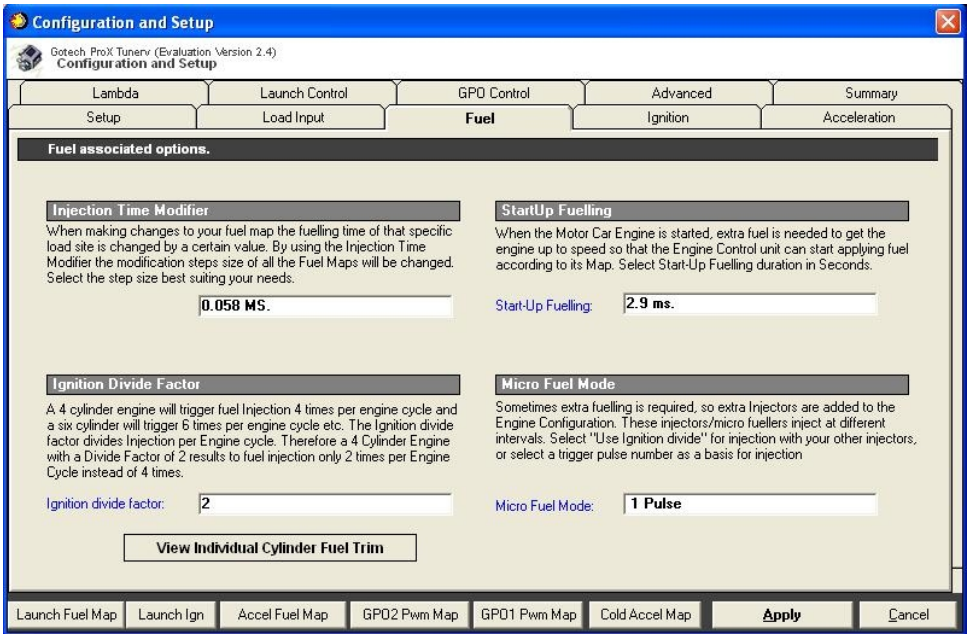
The Gotech ecu comes standard with a 2.5 Bar map sensor. This map sensor is capable of 1.5 Bar (21psi) positive pressure and 1 Bar (14 psi) negative


Load Sensor Start Input
Some Primary Load Input Sensors have different Starting values than others, making it very difficult to calculate the correct Engine Load with different sensors. That is why the Load Start Setting is useful for calibrating your Input Sensor. Select Your Input Sensor Load Start value so that the ECU can adjust the Load Sites accordingly.
Sensor Load Start:
1
Click here
Load Sensor Divide / Increase
Some Primary Load Input Sensors have a different load range than others, which is why the Load Divide/Increment Setting is useful for calibrating your range of input load values into the best possible workable Load range. Select a suitable Load Divide/Incr value for your sensor.
Sensor Load Div/Incr:
6
Click here

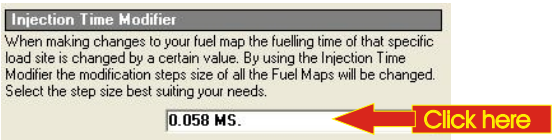
The load start and load increment is used to calibrate the map sensor or the TPS.

When running map only these values are:
Normally aspirated - Load start 1, Load increment 3
Turbo Up to 1 Bar boost - Load start 1, Load increment 6
Turbo Up to 1.5 Bar boost - Load start 1, Load increment 8

Fuel: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Fuel associated options.
Injection Time Modifier
When making changes to your fuel map the fuelling time of that specific load site is changed by a certain value. By using the Injection Time Modifier the modification steps size of all the Fuel Maps will be changed. Select the step size best suiting your needs.
0.058 MS.
StartUp Fuelling
When the Motor Car Engine is started, extra fuel is needed to get the engine up to speed so that the Engine Control unit can start applying fuel according to its Map. Select Start-Up Fuelling duration in Seconds.
Start-Up Fuelling:
2.9 ms.
Ignition Divide Factor
A 4 cylinder engine will trigger fuel Injection 4 times per engine cycle and a six cylinder will trigger 6 times per engine cycle etc. The Ignition divide factor divides Injection per Engine cycle. Therefore a 4 Cylinder Engine with a Divide Factor of 2 results to fuel injection only 2 times per Engine Cycle instead of 4 times.
Ignition divide factor:
2
Micro Fuel Mode
Sometimes extra fuelling is required, so extra Injectors are added to the Engine Configuration. These injectors/micro fuellers inject at different intervals. Select "Use Ignition divide" for injection with your other injectors, or select a trigger pulse number as a basis for injection
Micro Fuel Mode:
1 Pulse
View Individual Cylinder Fuel Trim
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

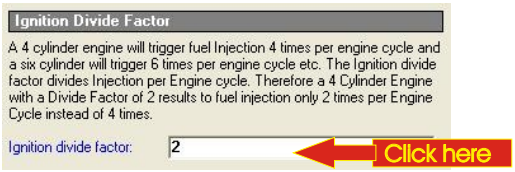
The fuel screen is used for basic injection setup and fuel trimming. The individual fuel trimming should only be used on full sequential applications.


Injection Time Modifier
When making changes to your fuel map the fuelling time of that specific load site is changed by a certain value. By using the Injection Time Modifier the modification steps size of all the Fuel Maps will be changed. Select the step size best suiting your needs.
0.058 MS.
Click here

The injection time modifier changes the steps in which fuel map can be programmed. Eg each click up will make a 0.058ms change on the fuel map.

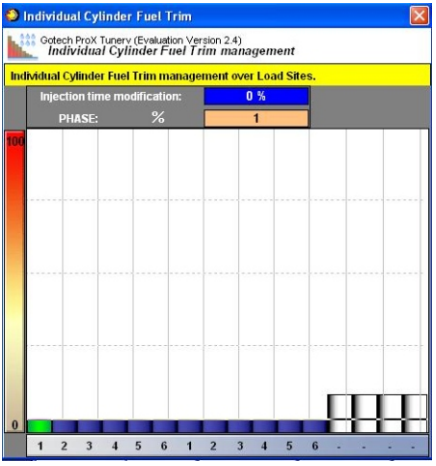
Mode	Injection Time modifier suggested
Batch or Phased	0.058ms
Full sequential	0.087ms
Batch or phased with big injectors	0.029ms

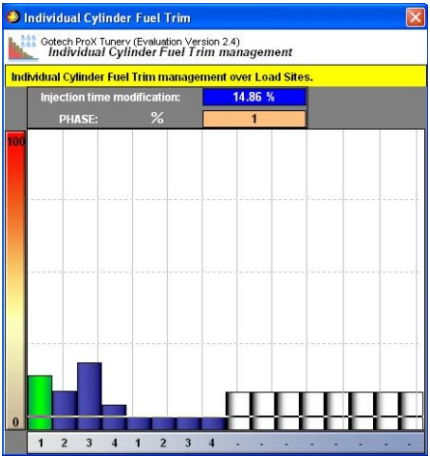
Fuel: (F5)


Ignition Divide Factor
A 4 cylinder engine will trigger fuel Injection 4 times per engine cycle and a six cylinder will trigger 6 times per engine cycle etc. The Ignition divide factor divides Injection per Engine cycle. Therefore a 4 Cylinder Engine with a Divide Factor of 2 results to fuel injection only 2 times per Engine Cycle instead of 4 times.
Ignition divide factor:
2
Click here

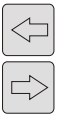
The ignition divide factor is only active in batch firing modes. The ignition divide factor divides the injection per engine cycle.

Engine Cylinders	Ignition divide suggested
1	1
2	1
3	1
4	2
5	1
6	3
8	4





When running in full sequential mode each cylinder can be trimmed individually. The trimming can be done either in percentage or injector time. You can then add a percentage onto the injection time or add a physical value.

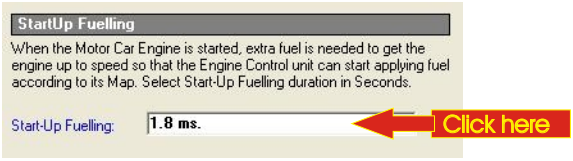

Move Current Load Site Of Tuning Left

Move Current Load Site Of Tuning Right

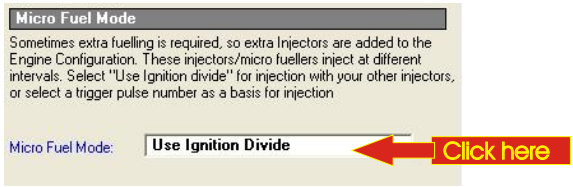
Decrease injector time or percentage

Increase injector time or percentage

Fuel: (F5)

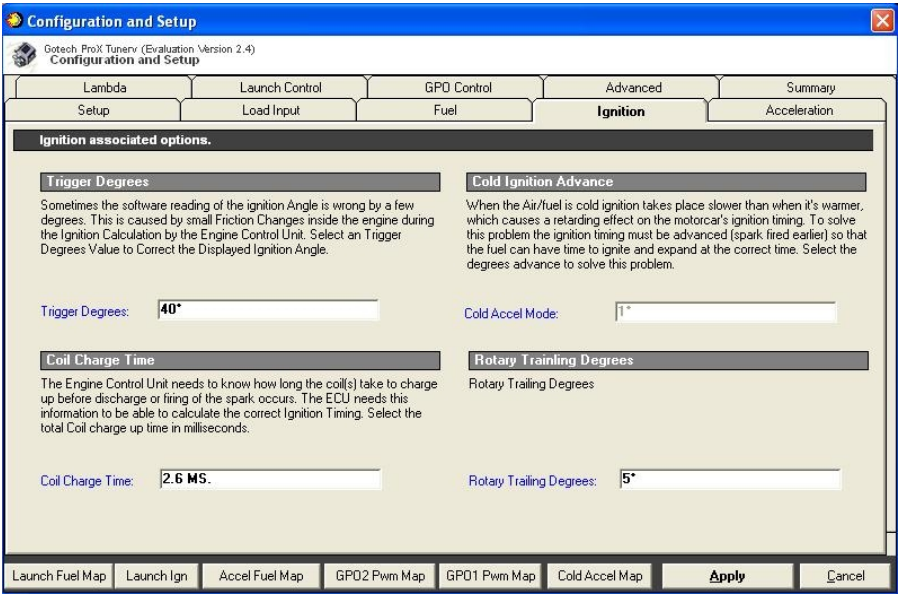

StartUp Fuelling
When the Motor Car Engine is started, extra fuel is needed to get the engine up to speed so that the Engine Control unit can start applying fuel according to its Map. Select Start-Up Fuelling duration in Seconds.
Start-Up Fuelling:
1.8 ms.
Click here

The startup fueling setting can be used to add more fuel whilst cranking the engine. This setting is only active when the engine temperature is below 50'c. In most cases around 1.5ms is more than sufficient fo a good startup. When running big injectors this value must be changed accordingly to prevent engine over fueling.


Micro Fuel Mode
Sometimes extra fuelling is required, so extra Injectors are added to the Engine Configuration. These injectors/micro fuellers inject at different intervals. Select "Use Ignition divide" for injection with your other injectors, or select a trigger pulse number as a basis for injection
Micro Fuel Mode:
Use Ignition Divide
Click here

The micro fuel mode configures the micro fueller's ignition divide. The micro fueller can be setup to use the same ignition divide as the main injectors or be setup to fire differently. The recommended setting is [Use Ignition Divide]

Ignition: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Ignition associated options.
Trigger Degrees
Sometimes the software reading of the ignition Angle is wrong by a few degrees. This is caused by small Friction Changes inside the engine during the Ignition Calculation by the Engine Control Unit. Select an Trigger Degrees Value to Correct the Displayed Ignition Angle.
Trigger Degrees:
40°
Cold Ignition Advance
When the Air/fuel is cold ignition takes place slower than when it's warmer, which causes a retarding effect on the motorcar's ignition timing. To solve this problem the ignition timing must be advanced (spark fired earlier) so that the fuel can have time to ignite and expand at the correct time. Select the degrees advance to solve this problem.
Cold Accel Mode:
1°
Coil Charge Time
The Engine Control Unit needs to know how long the coil(s) take to charge up before discharge or firing of the spark occurs. The ECU needs this information to be able to calculate the correct Ignition Timing. Select the total Coil charge up time in milliseconds.
Coil Charge Time:
2.6 MS.
Rotary Trainling Degrees
Rotary Trailing Degrees
Rotary Trailing Degrees:
5°
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The ignition screen controls basic ignition options.

Trigger Degrees:
The trigger degrees is the degrees before TDC at which the ecu is triggered. In most cases this would be 40 degrees. When running a trigger degree of 40 the maximum ignition timing achievable will also be 40 degrees. This value should never be above 55'.

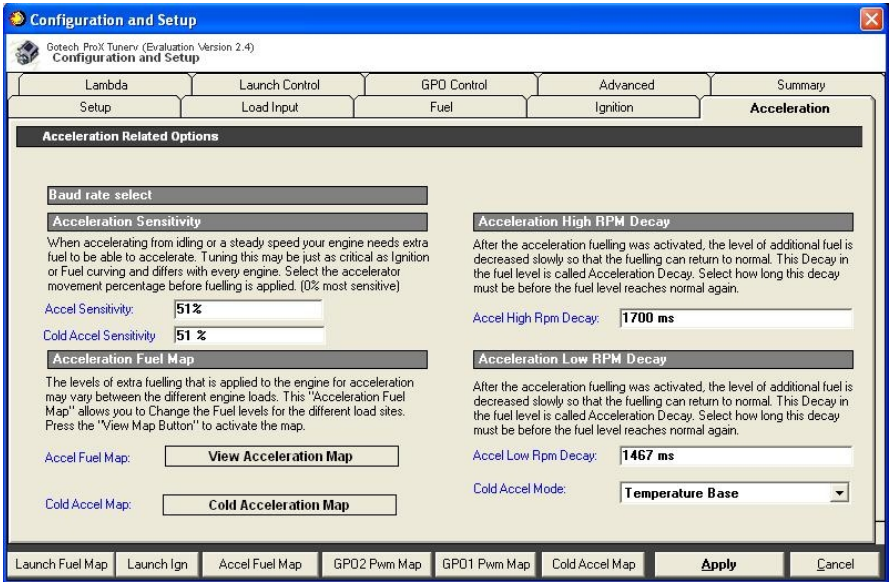
Coil charge time:
The ecu can control the time for which the ignition coil will be charged before discharge will take place. There are certain conditions that must be taken into consideration when charging the ignition coil. These are; Number of Cylinders and maximum engine RPM.

$$\text{Max Charge time} = \left(\frac{120000}{\text{Max RPM x Cylinders}}\right) - 0.5$$

Cold Ignition Advance:
The ignition timing can be advanced whilst cranking the engine to aid cold starting. In most cases this is not required, thus this feature is locked for feature use.

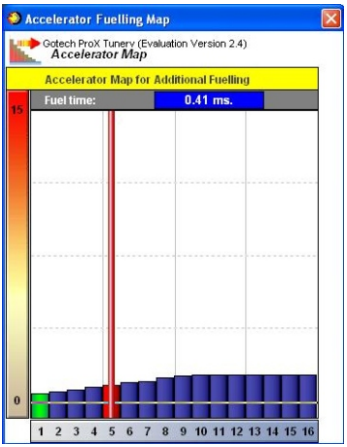
Rotary Trailing Degrees:
On Rotary engines the leading and trailing spark plugs are not fired at precisely the same time. The ignition trail can be set be suite these engines. The recommended setting is 6'.

Acceleration: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Lambda
Launch Control
GPO Control
Advanced
Summary
Setup
Load Input
Fuel
Ignition
Acceleration
Acceleration Related Options
Baud rate select
Acceleration Sensitivity
When accelerating from idling or a steady speed your engine needs extra fuel to be able to accelerate. Tuning this may be just as critical as Ignition or Fuel curving and differs with every engine. Select the accelerator movement percentage before fuelling is applied. (0% most sensitive)
Accel Sensitivity:
51%
Cold Accel Sensitivity
51 %
Acceleration Fuel Map
The levels of extra fuelling that is applied to the engine for acceleration may vary between the different engine loads. This "Acceleration Fuel Map" allows you to Change the Fuel levels for the different load sites. Press the "View Map Button" to activate the map.
Accel Fuel Map:
View Acceleration Map
Cold Accel Map:
Cold Acceleration Map
Acceleration High RPM Decay
After the acceleration fuelling was activated, the level of additional fuel is decreased slowly so that the fuelling can return to normal. This Decay in the fuel level is called Acceleration Decay. Select how long this decay must be before the fuel level reaches normal again.
Accel High Rpm Decay:
1700 ms
Acceleration Low RPM Decay
After the acceleration fuelling was activated, the level of additional fuel is decreased slowly so that the fuelling can return to normal. This Decay in the fuel level is called Acceleration Decay. Select how long this decay must be before the fuel level reaches normal again.
Accel Low Rpm Decay:
1467 ms
Cold Accel Mode:
Temperature Base
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The acceleration screen controls basic acceleration pump options and setup.

Acceleration sensitivity:
The Acceleration sensitivity configures how sensitive the Acceleration pump should be. The lower the value, the more sensitive the pump. Normally around 10% is a good place to start. There are two settings, one for the accel pump and one for the cold accel pump. The cold accel pump adds a percentage onto the normal accel pump to aid cold rev up. If either of the sensitivities are set too low the accel pump may switch when it is not required and over fuel the engine.

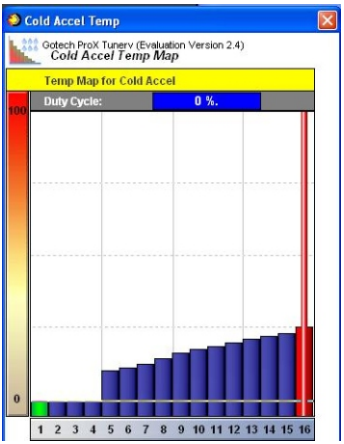

Accelerator Fuelling Map
Gotech ProX Tunerv (Evaluation Version 2.4)
Accelerator Map
Accelerator Map for Additional Fuelling
Fuel time:
0.41 ms.
15
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

The accelerator fueling map adds fuel onto the main fuel map to aid rev up conditions. This map adds fuel in a ms value.

The accelerator value added can be seen on the main fuel screen. Normally the accel map should only be activated after full tuning has been done.

- Move Current Load Site Of Tuning Left
- Move Current Load Site Of Tuning Right
- Decrease accelerator pump time
- Increase accelerator pump time

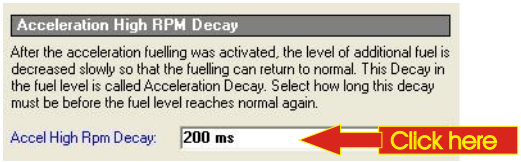
Acceleration: (F5)


Cold Accel Temp
Gotech ProX Tunerv (Evaluation Version 2.4)
Cold Accel Temp Map
Temp Map for Cold Accel
Duty Cycle:
0 %.
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

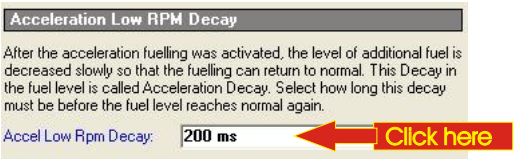
The cold accelerator map adds a percentage onto the acceleration map to aid rev up conditions when the engine is cold.

The cold acceleration map is based on temperature (left to right where the right hand is cold) and percentage.

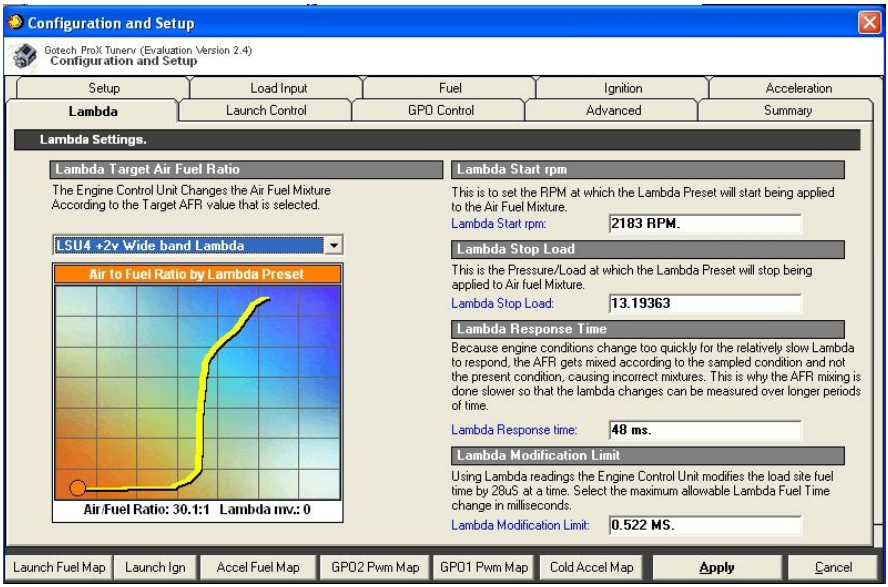
The accelerator value added can be seen on the main fuel screen. Normally the accel map should only be activated after full tuning has been done.


Acceleration High RPM Decay
After the acceleration fuelling was activated, the level of additional fuel is decreased slowly so that the fuelling can return to normal. This Decay in the fuel level is called Acceleration Decay. Select how long this decay must be before the fuel level reaches normal again.
Accel High Rpm Decay:
200 ms
Click here

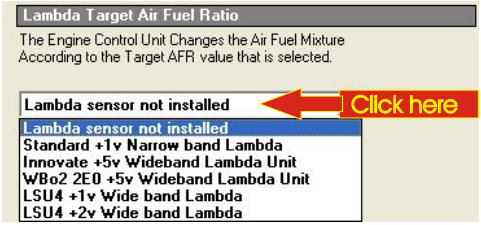
The acceleration high rpm decay controls how long the acceleration pump should be kept activated before the fueling returns back to normal.


Acceleration Low RPM Decay
After the acceleration fuelling was activated, the level of additional fuel is decreased slowly so that the fuelling can return to normal. This Decay in the fuel level is called Acceleration Decay. Select how long this decay must be before the fuel level reaches normal again.
Accel Low Rpm Decay:
200 ms
Click here

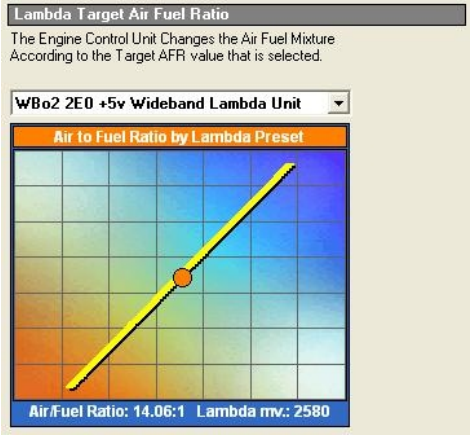
Lambda: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Setup
Load Input
Fuel
Ignition
Acceleration
Lambda
Launch Control
GPO Control
Advanced
Summary
Lambda Settings.
Lambda Target Air Fuel Ratio
The Engine Control Unit Changes the Air Fuel Mixture According to the Target AFR value that is selected.
LSU4 +2v Wide band Lambda
Air to Fuel Ratio by Lambda Preset
Air/Fuel Ratio: 30.1:1 Lambda mv.: 0
Lambda Start rpm
This is to set the RPM at which the Lambda Preset will start being applied to the Air Fuel Mixture.
Lambda Start rpm:
2183 RPM.
Lambda Stop Load
This is the Pressure/Load at which the Lambda Preset will stop being applied to Air fuel Mixture.
Lambda Stop Load:
13.19363
Lambda Response Time
Because engine conditions change too quickly for the relatively slow Lambda to respond, the AFR gets mixed according to the sampled condition and not the present condition, causing incorrect mixtures. This is why the AFR mixing is done slower so that the lambda changes can be measured over longer periods of time.
Lambda Response time:
48 ms.
Lambda Modification Limit
Using Lambda readings the Engine Control Unit modifies the load site fuel time by 28uS at a time. Select the maximum allowable Lambda Fuel Time change in milliseconds.
Lambda Modification Limit:
0.522 MS.
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The lambda screen is used to setup the lambda sensor and select lambda type.


Lambda Target Air Fuel Ratio
The Engine Control Unit Changes the Air Fuel Mixture According to the Target AFR value that is selected.
Lambda sensor not installed
Click here
Lambda sensor not installed
Standard +1v Narrow band Lambda
Innovate +5v Wideband Lambda Unit
WBo2 2E0 +5v Wideband Lambda Unit
LSU4 +1v Wide band Lambda
LSU4 +2v Wide band Lambda

Lambda sensor type:
The type of lambda input can be selected These can be from narrow band sensors to wideband analogue inputs.


Lambda Target Air Fuel Ratio
The Engine Control Unit Changes the Air Fuel Mixture According to the Target AFR value that is selected.
WBo2 2E0 +5v Wideband Lambda Unit
Air to Fuel Ratio by Lambda Preset
Air/Fuel Ratio: 14.06:1 Lambda mv.: 2580

Lambda Target AFR:
The AFR target can be selected by using the mouse and clicking on the preferred value.

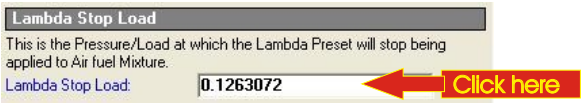
The AFR and lambda values are displayed on the bottom of the screen.

Each lambda sensor uses a different lookup table for the AFR.

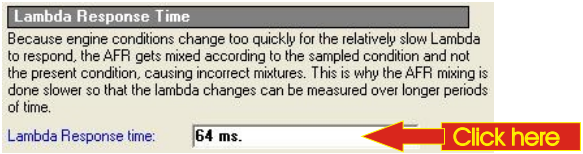
Lambda: (F5)

Lambda Start rpm
This is to set the RPM at which the Lambda Preset will start being applied to the Air Fuel Mixture.
Lambda Start rpm:
12525 RPM.
Click here

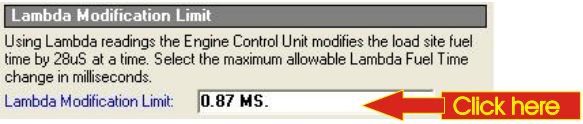
The lambda start RPM is the RPM at which the closed loop lambda control will start working. Normally the lambda will get a good reading above around 2000rpm.


Lambda Stop Load
This is the Pressure/Load at which the Lambda Preset will stop being applied to Air fuel Mixture.
Lambda Stop Load:
0.1263072
Click here

The lambda stop load is the load site at which the closed loop lambda control will stop working. Normally you do not want the lambda to operate past half throttle or in boost. The lambda sensor should only be used to optimize cruising mixtures.

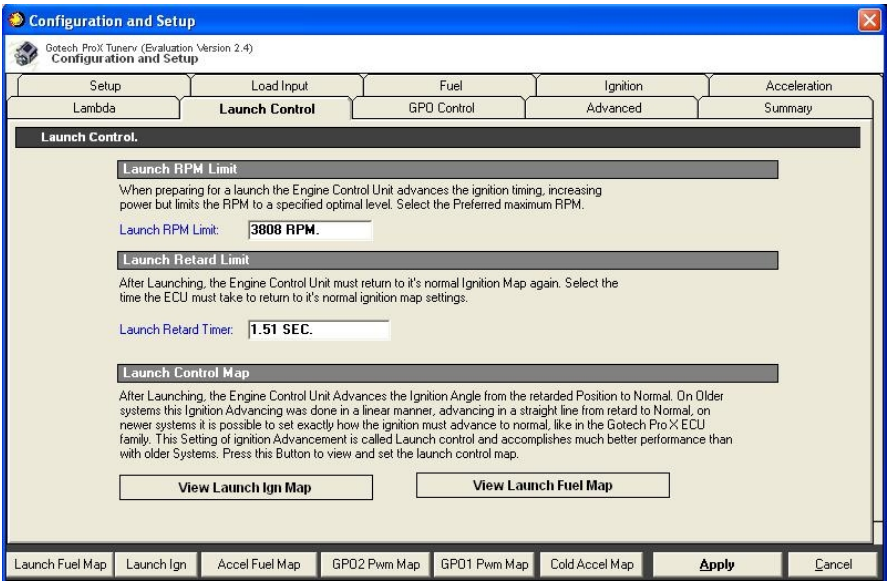

Lambda Response Time
Because engine conditions change too quickly for the relatively slow Lambda to respond, the AFR gets mixed according to the sampled condition and not the present condition, causing incorrect mixtures. This is why the AFR mixing is done slower so that the lambda changes can be measured over longer periods of time.
Lambda Response time:
64 ms.
Click here

The lambda response time determines how long the ecu should take before making a change to the engine's mixture. The ecu should not be able to change the mixture too quickly, the ECU should have enough time to take a couple of samples and then change the mixture accordingly.


Lambda Modification Limit
Using Lambda readings the Engine Control Unit modifies the load site fuel time by 28uS at a time. Select the maximum allowable Lambda Fuel Time change in milliseconds.
Lambda Modification Limit:
0.87 MS.
Click here

The lambda modification limit controls the maximum allowable fuel change. The lambda limit is in ms.

Launch Control: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Setup
Load Input
Fuel
Ignition
Acceleration
Lambda
Launch Control
GPO Control
Advanced
Summary
Launch Control.
Launch RPM Limit
When preparing for a launch the Engine Control Unit advances the ignition timing, increasing power but limits the RPM to a specified optimal level. Select the Preferred maximum RPM.
Launch RPM Limit:
3808 RPM.
Launch Retard Limit
After Launching, the Engine Control Unit must return to it's normal Ignition Map again. Select the time the ECU must take to return to it's normal ignition map settings.
Launch Retard Timer:
1.51 SEC.
Launch Control Map
After Launching, the Engine Control Unit Advances the Ignition Angle from the retarded Position to Normal. On Older systems this Ignition Advancing was done in a linear manner, advancing in a straight line from retard to Normal, on newer systems it is possible to set exactly how the ignition must advance to normal, like in the Gotech Pro X ECU family. This Setting of ignition Advancement is called Launch control and accomplishes much better performance than with older Systems. Press this Button to view and set the launch control map.
View Launch Ign Map
View Launch Fuel Map
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The launch control screen is used to setup the launch control RPM and time limit.

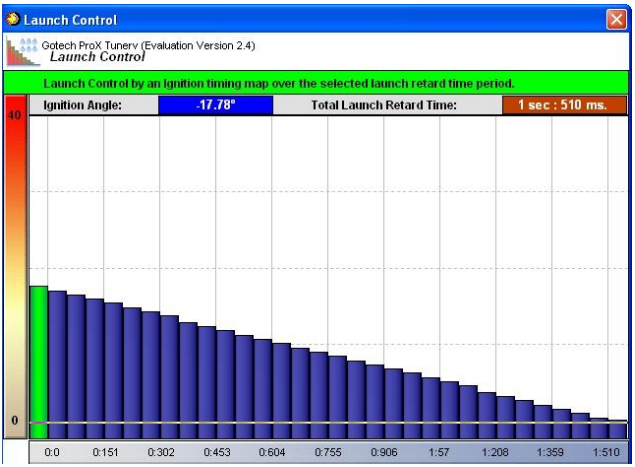
Launch RPM Limit
When preparing for a launch the Engine Control Unit advances the ignition timing, increasing power but limits the RPM to a specified optimal level. Select the Preferred maximum RPM.
Launch RPM Limit:
5150 RPM.
Click here

The launch RPM limit is where the engine will limit whilst the launch control is activated. This value is fully configurable.

Launch Retard Limit
After Launching, the Engine Control Unit must return to it's normal Ignition Map again. Select the time the ECU must take to return to it's normal ignition map settings.
Launch Retard Timer:
0.85 SEC.
Click here

Launch Retard Limit. After de-activating the launch control this is the time that it will take for the ecu to start advancing the ignition timing back to it's original state.

Launch Control: (F5)



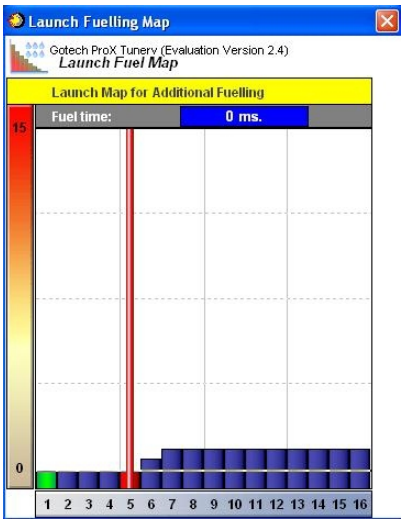
Move Current Load Site Of Tuning Left

Move Current Load Site Of Tuning Right

Advance ignition timing closer to original

Retard Ignition Timing

The launch ignition map is used to retard the ignition timing whilst the launch control is activated. The ignition timing can be kept retarded for a certain amount of time and then brought back to the original position as desired.


Launch Fuelling Map
Gotech ProX Tunerv (Evaluation Version 2.4)
Launch Fuel Map
Launch Map for Additional Fuelling
Fuel time:
0 ms.
15
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

The Launch fuel map can be used to enrich the engine whilst the launch control has been activated. The enriched mixture will help spool up the turbo and cool the exhaust housing.

Be aware not to add too much fuel as it may cause the engine to over fuel and misfire.

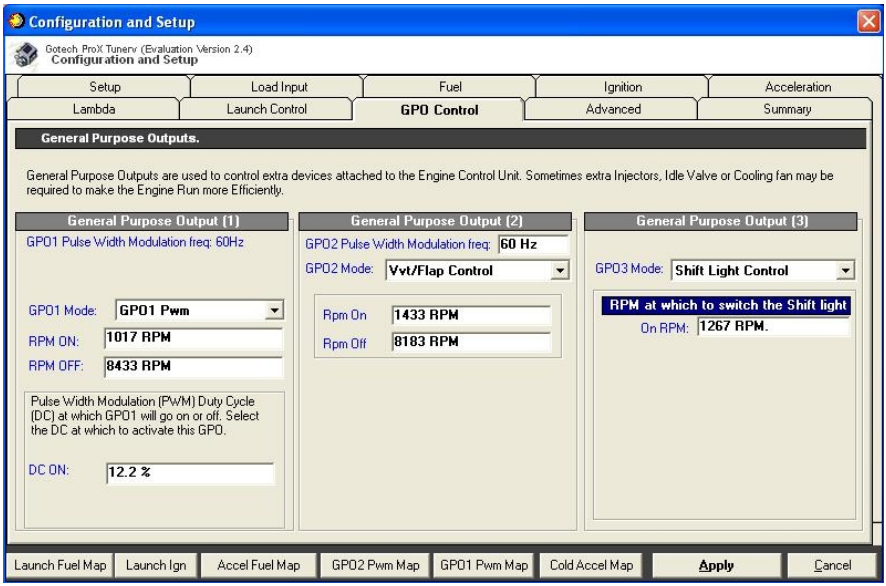
Move Current Load Site Of Tuning Left

Move Current Load Site Of Tuning Right

Decrease Injector time

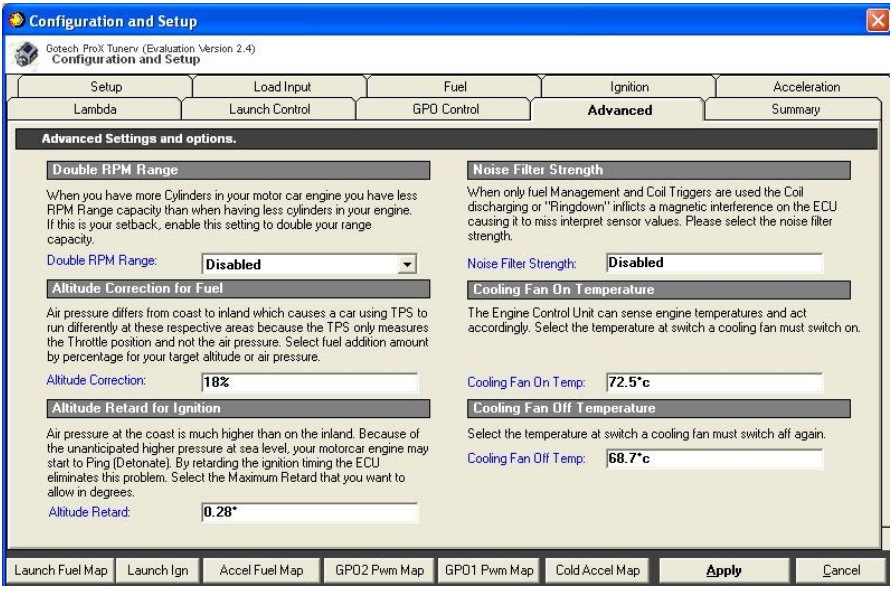
Increase injector time

GPO Control: (F5)

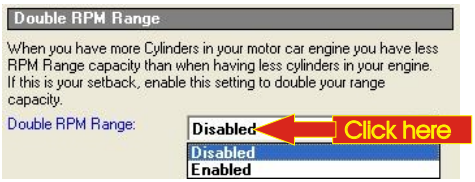

Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Setup
Load Input
Fuel
Ignition
Acceleration
Lambda
Launch Control
GPO Control
Advanced
Summary
General Purpose Outputs.
General Purpose Outputs are used to control extra devices attached to the Engine Control Unit. Sometimes extra Injectors, Idle Valve or Cooling fan may be required to make the Engine Run more Efficiently.
General Purpose Output (1)
GPO1 Pulse Width Modulation freq: 60Hz
GPO1 Mode: GPO1 Pwm
RPM ON: 1017 RPM
RPM OFF: 8433 RPM
Pulse Width Modulation (PWM) Duty Cycle (DC) at which GPO1 will go on or off. Select the DC at which to activate this GPO.
DC ON: 12.2 %
General Purpose Output (2)
GPO2 Pulse Width Modulation freq: 60 Hz
GPO2 Mode: Vvt/Flap Control
Rpm On 1433 RPM
Rpm Off 8183 RPM
General Purpose Output (3)
GPO3 Mode: Shift Light Control
RPM at which to switch the Shift light
On RPM: 1267 RPM.
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The GPO screen controls all the GPO outputs and their functionality.

Advanced: (F5)


Configuration and Setup
Gotech ProX Tunerv (Evaluation Version 2.4)
Configuration and Setup
Setup
Load Input
Fuel
Ignition
Acceleration
Lambda
Launch Control
GPO Control
Advanced
Summary
Advanced Settings and options.
Double RPM Range
When you have more Cylinders in your motor car engine you have less RPM Range capacity than when having less cylinders in your engine. If this is your setback, enable this setting to double your range capacity.
Double RPM Range:
Disabled
Noise Filter Strength
When only fuel Management and Coil Triggers are used the Coil discharging or "Ringdown" inflicts a magnetic interference on the ECU causing it to miss interpret sensor values. Please select the noise filter strength.
Noise Filter Strength:
Disabled
Altitude Correction for Fuel
Air pressure differs from coast to inland which causes a car using TPS to run differently at these respective areas because the TPS only measures the Throttle position and not the air pressure. Select fuel addition amount by percentage for your target altitude or air pressure.
Altitude Correction:
18%
Cooling Fan On Temperature
The Engine Control Unit can sense engine temperatures and act accordingly. Select the temperature at switch a cooling fan must switch on.
Cooling Fan On Temp:
72.5°c
Altitude Retard for Ignition
Air pressure at the coast is much higher than on the inland. Because of the unanticipated higher pressure at sea level, your motorcar engine may start to Ping (Detonate). By retarding the ignition timing the ECU eliminates this problem. Select the Maximum Retard that you want to allow in degrees.
Altitude Retard:
0.28°
Cooling Fan Off Temperature
Select the temperature at switch a cooling fan must switch aff again.
Cooling Fan Off Temp:
68.7°c
Launch Fuel Map
Launch Ign
Accel Fuel Map
GPO2 Pwm Map
GPO1 Pwm Map
Cold Accel Map
Apply
Cancel

The advanced screen controls the double rpm, cooling fan, noise filter and altitude settings.


Double RPM Range
When you have more Cylinders in your motor car engine you have less RPM Range capacity than when having less cylinders in your engine. If this is your setback, enable this setting to double your range capacity.
Double RPM Range:
Disabled
Click here
Disabled
Enabled

Double RPM Range:
The double RPM range setting is used for engines that need tuning ability at higher RPM ranges.

Eg. When enabled on a eight cylinder engine each RPM range will be 500rpm and you can map up to 13500rpm instead of 6750rpm.

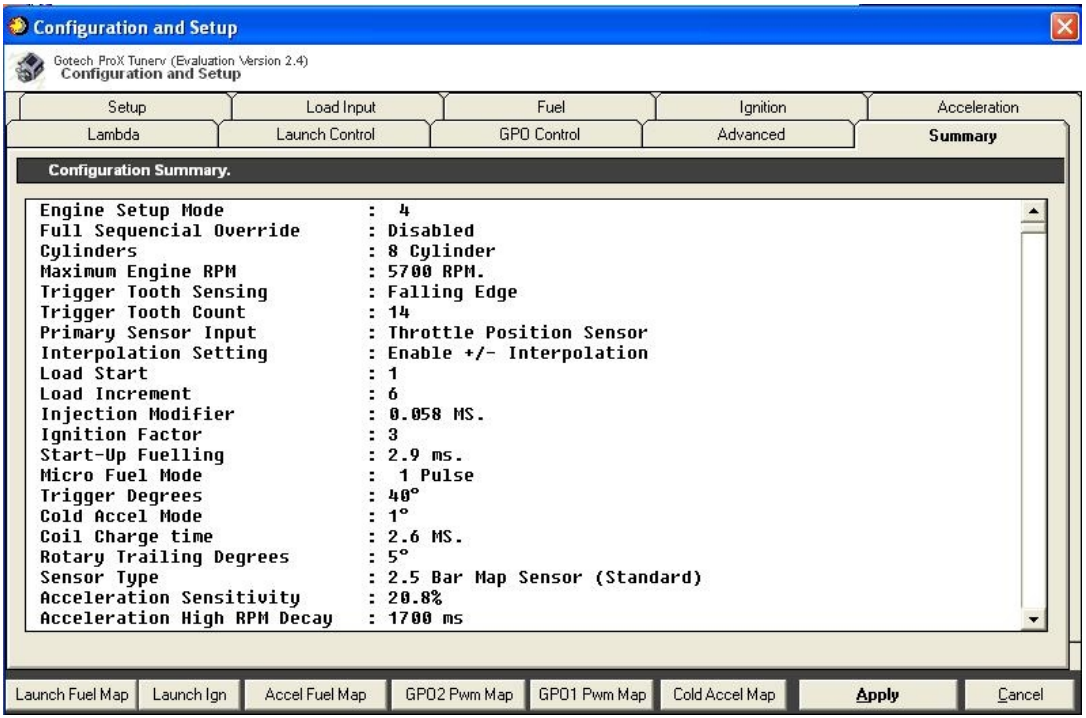
The Altitude correction value is only available when running in TPS mode. The Gotech ecu can then add a percentage onto the main fuel map to enrich the engine when going to the coast or lean it out when going up to altitude.

The altitude retard value is used to retard the ignition timing when going to the coast from altitude. This setting is only available when running in TPS mode.

Noise filter strength. The noise filter should always be disabled, except when triggering the ecu from coil negative and only running the fuel.

Cooling fan. The cooling fan can be switched on at a temperature and then off again once it has cooled down. Both these values can be set to any temperature.

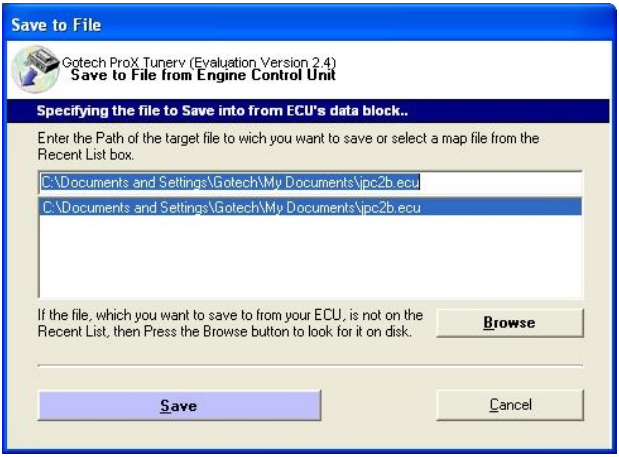
Summary: (F5)



The summary page simply shows all the selected values on one page for a quick reference. You cannot change any values on this page, they can only be viewed.

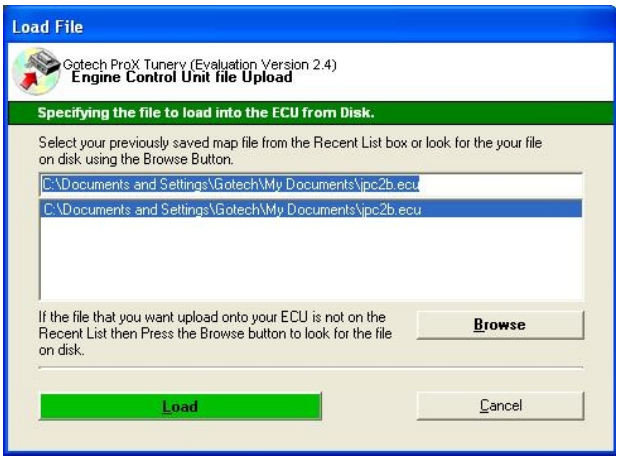
After making any changes on the f5 setup screens remember to press the apply button to save them to the Gotech ecu.

Save and Upload maps:


Save to File
Gotech ProX Tunerv (Evaluation Version 2.4)
Save to File from Engine Control Unit
Specifying the file to Save into from ECU's data block..
Enter the Path of the target file to wich you want to save or select a map file from the Recent List box.
C:\Documents and Settings\Gotech\My Documents\jpc2b.ecu
C:\Documents and Settings\Gotech\My Documents\jpc2b.ecu
If the file, which you want to save to from your ECU, is not on the Recent List, then Press the Browse button to look for it on disk.
Browse
Save
Cancel

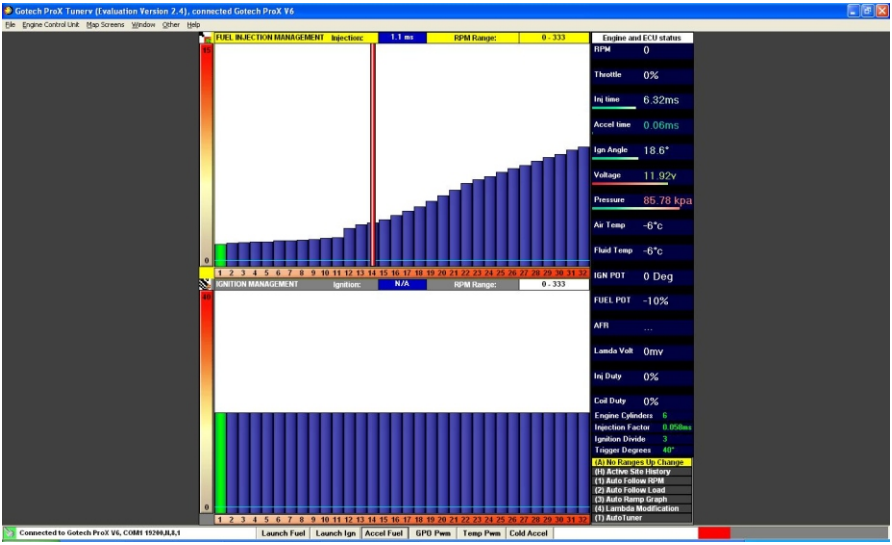
The Gotech software is capable of saving the current map from your Gotech ECU to the hard drive of your notebook / desktop.

To save your current map from the ECU press the F4 button. You can then enter a file name into the block and simply click on the save button. Wait for the map to save completely before resuming with any tuning.


Load File
Gotech ProX Tunerv (Evaluation Version 2.4)
Engine Control Unit file Upload
Specifying the file to load into the ECU from Disk.
Select your previously saved map file from the Recent List box or look for the your file on disk using the Browse Button.
C:\Documents and Settings\Gotech\My Documents\jpc2b.ecu
C:\Documents and Settings\Gotech\My Documents\jpc2b.ecu
If the file that you want upload onto your ECU is not on the Recent List then Press the Browse button to look for the file on disk.
Browse
Load
Cancel

To load a map from your computer's hard drive press the F3 button. After the load file window appears select the preferred map to upload and click on the load button. This will then transfer the map from your computer's hard drive to the Gotech ECU. Wait for the map to load completely before resuming with any tuning.

Online data logging:



The Gotech software is capable of online data logging. The online data log can be used for basic fault finding. To start logging press the L key. To stop the logging process press the L key again. To view the logged data press the S key.